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November 20, 1931

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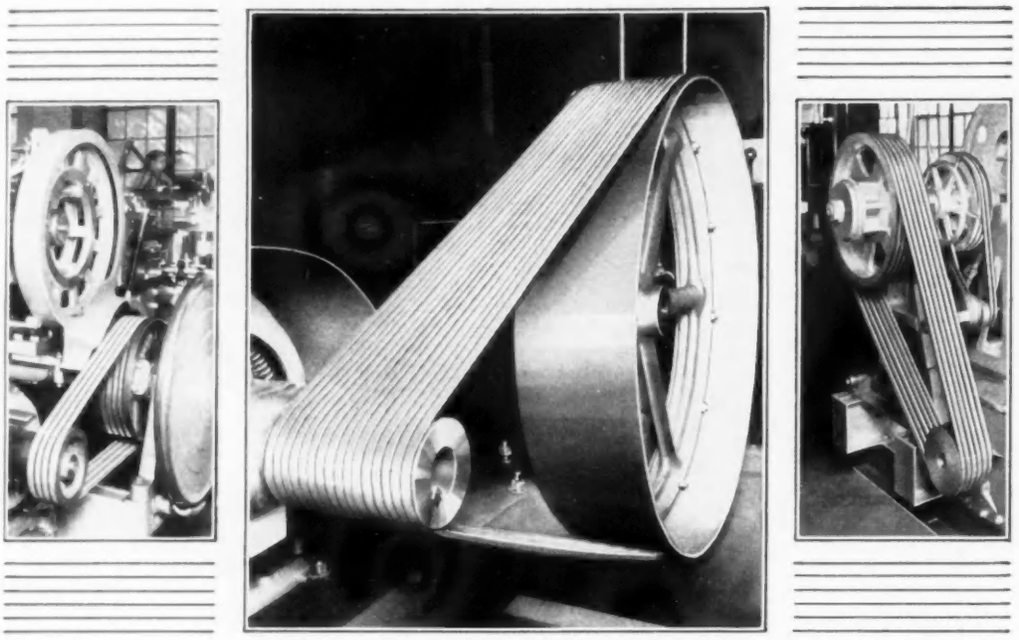

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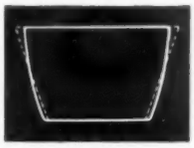

FIG. 1

Engineers know from experience what happens when the ordinary straight-sided V-Belt bends around a pulley. The top of the belt **narrows,** the bottom **widens,** the sides **bulge out** (Figure 1) as shown above.

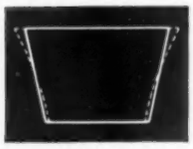

FIG. 2

Try to fit this shape into the sheave groove and two facts become clear. (1) The belt will get excessive wear where it bulges---**shorter life!** (2) The whole side of the belt can not uniformly grip the pulley---**a loss in drive efficiency.**

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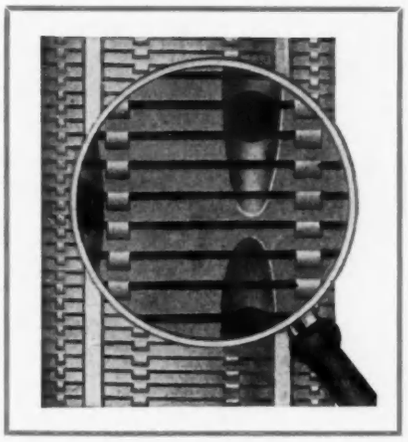

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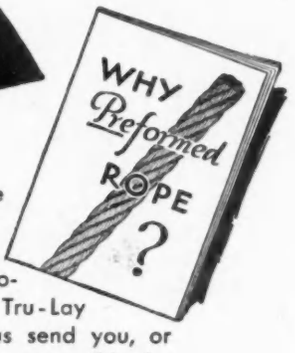

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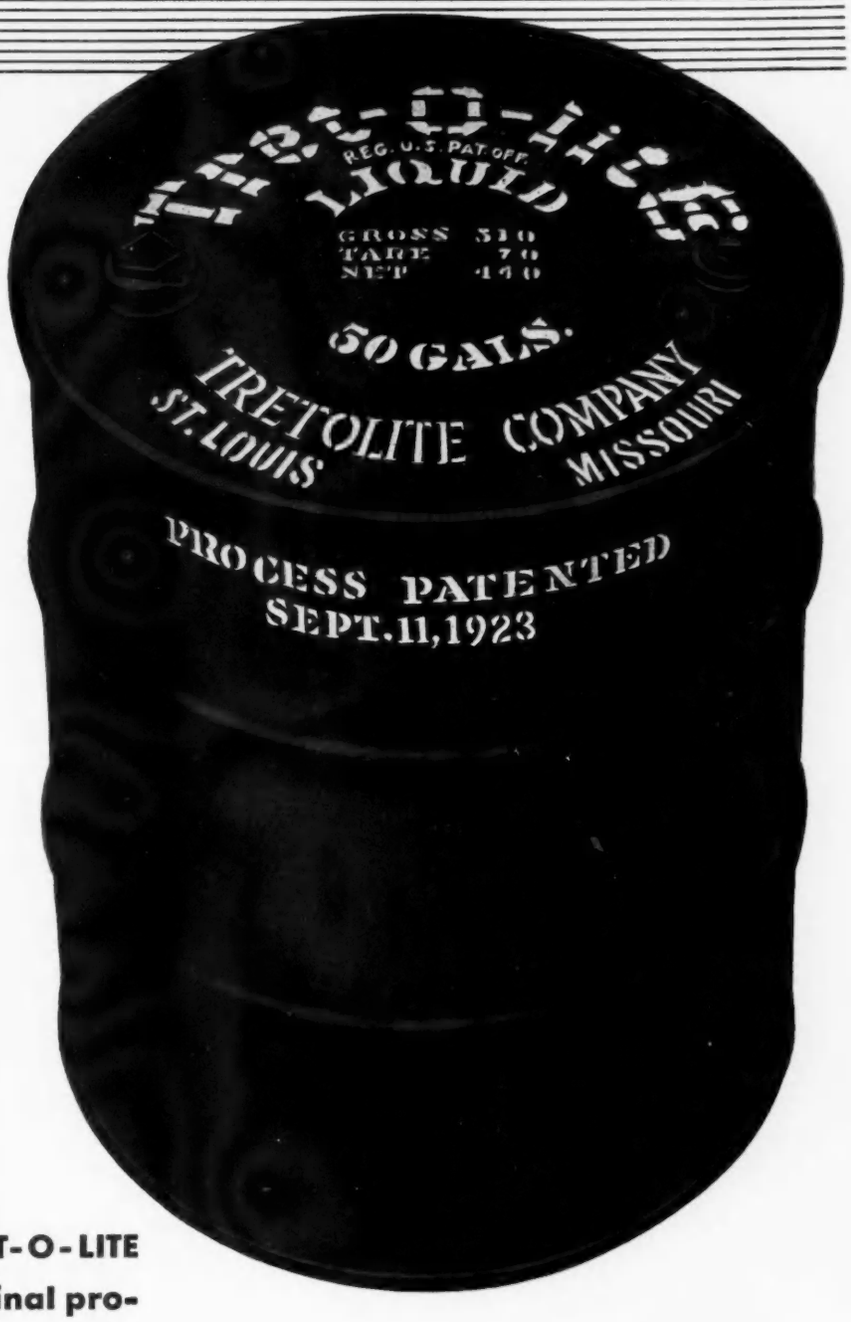

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and that Brewster products are the standard of service.

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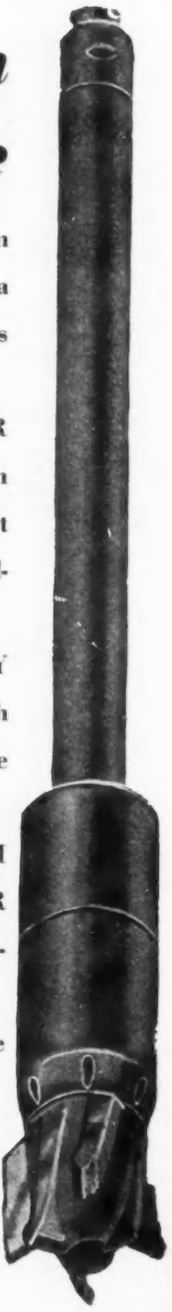

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THE OIL WEEKLY

November 20, 1931
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Editor

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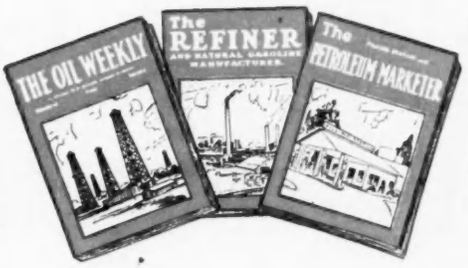

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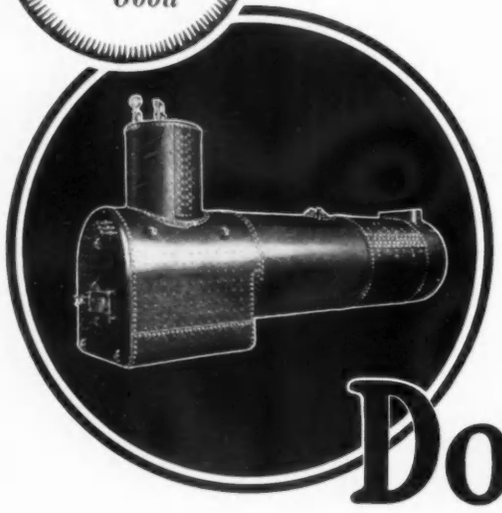

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DONOVAN BOILERS

NOV 23 1931

THE OIL WEEKLY

VOLUME 63, NO. 10 NOVEMBER 20, 1931

Institute Devising Program for Unit Plan Application

By SPENCER W. ROBINSON

CHICAGO, Ill.—Crystallizing into definite action, the growing sentiment in the industry for some plan of unit operation, the Board of Directors of the American Petroleum Institute in session here last week acted on the resolution offered by the general assembly of the Institute, and appointed a committee of their members to "prepare and recommend to the board within 60 days a comprehensive program designed to put into practical operation the principle herein enunciated."

The board's resolution was as follows:

"Whereas, the prevailing practices in the development of oil and gas pools and the production therefrom based upon the capture by each owner in the pool of as much as he can, as fast as he can, regardless of injury to his neighbor, have been proven to be wasteful of these irreplaceable natural resources, inequitable as between owners of the common reservoir and demoralizing to the whole petroleum industry,

"Now therefore be it resolved, by the Board of Directors of the American Petroleum Institute, that it endorses, and believes the petroleum industry likewise endorses, the principle that each owner of the surface is entitled only to his equitable and ratable share of the recoverable oil and gas and gas energy in the common pool in the proportion which the recoverable reserves underlying his land bear to the recoverable reserves in the pool."

This action was anticipated at the opening session of the twelfth annual meeting of the Institute (See THE OIL WEEKLY, page 21, Nov. 13, 1931), when the program indicated the intense interest in the subject. At the following group session on production held Wednesday afternoon, presided over by R. R. Penn, retiring Vice President for Production of the Institute, the three papers, designed to cover the three important phases of the problem, namely: Economic, Engineering and Legal, were presented and discussed. A resolution sponsored by J. Edgar Pew, Sun Oil Company, Philadelphia, was presented and passed only after which at times proved to be a heated debate.

The Pew resolution, taken from a paper he presented, entitled, "The Policies Involved," was summarized as follows:

(1) That unit operations, which we have heretofore approved, should be practiced in all new developments, and introduced as fast as possible in old ones; and that we set up machinery to bring about the removal of any obstacle to this program, through state legislation.

(2) That the owner of the surface is entitled only to his ratable share of the oil and gas in a common pool, and we will unite to seek to bring about acceptancy of this principle in the laws of the oil producing states.

When the resolution was thrown open to question, Henry L. Doherty, champion of the unit plan and stormy petrel of the Institute's board before his resignation several years ago, immediately interposed an objection to the adoption of that part of Mr. Pew's statement concerning state legislation. Mr. Doherty explained that the subject was too broad to be limited to any one or several courses of procedure. Mr. Pew then withdrew that part of his proposal.

S. A. Guiberson, Los Angeles, took the floor and said that he did not believe that the crowd assembled represented the independent element of the industry, and as an independent operator he vigorously opposed the plan as outlined, and any action by the members in the session without first submitting it to the industry at large. Further, Mr. Guiberson felt that the matter should be handled similar to the action the board has taken on the tariff

INSTITUTE TO MEET IN HOUSTON NEXT YEAR

Chicago.—The next annual meeting of the American Petroleum Institute will be held at the Rice Hotel, Houston, on November 15, 16 and 17, 1932, it was decided by the executive committee of the Institute at its last session here last Thursday.

While no definite action was taken it has been suggested that mid-year meetings of the Divisions of Production, Refining and Marketing, be held simultaneously at St. Louis, the first part of June. This action would greatly reduce the expense involved in the mid-year meetings and would probably meet with the unanimous approval of the industry.

question which had been voted on favorably but which was to be further polled by a questionnaire to all members of the Institute. He said that he would fight as long as he was a part of the industry to prevent the adoption of the proposed unit plan of operation but that if after it had been submitted to the industry generally and referred back to the Board of Directors of the Institute, as a member of that board he would be willing to vote with the majority.

Mr. Doherty answered Mr. Guiberson by saying that back "in 1893 when the plan was first suggested Mr. Guiberson said that without hearing what the plan was that he would vote 'no' and that he might as well cast his vote then, and that he had been voting the same way ever since!"

Will Push Vigorously

That the Institute's program, when submitted, will be vigorously pushed is indicated by the statement of President Amos L. Beaty, who said: "I want to get down to the vital things and do them. I believe that we should see in doing those things that in the wisdom of the executive committee and the board of the Institute are wise and helpful and go forward. That is my declaration of principles."

Coincident with the action of the Board of Directors, individual activities of the several committees of the Institute and particularly the Division of Production, were being developed along lines that would greatly facilitate such a movement. At a meeting of the General Committee, Division of Production, it was decided that the Drilling Practice group would concern itself during the coming year with the subject of "well spacing" which is one of the most disputed questions arising in any plan of unit operation as well as the economic principles of oil recovery. The Production Practice group will largely center its studies on "developments in production methods as a result of proration" which is the second step from a mechanical point of view in the efficient operation of a pool as a unit.

As an outgrowth of the revival of interest in the unit plan of operation, now styled "The New Conception in Production," it is expected that Henry L. Doherty will again join the ranks of the Institute's governing bodies which he has assured his full support in the furtherance of this cause.

Increase Number of Institute Directors

Chicago.—At a meeting of the Board of Directors of the American Petroleum Institute held here last week during the twelfth annual meeting of the Institute it was voted to increase the membership of the board to 72 instead of the 67 obtaining in the past. The board immediately elected the following additions:

Added Directors

E. T. Wilson, Denver, for the at-large group; George Legh-Jones, Shell Oil Company, San Francisco, for the Pacific Coast group; Robert R. Penn, Penn Oil Company, Dallas, for the Central United States group; and H. B. Earhart, White Star Refining Company, Detroit; W. S. Fitzpatrick, Prairie Oil & Gas Company, Independence; W. M. Irish, The Atlantic Refining Company, Philadelphia; E. T. Moore, Simms Petroleum Company, Dallas, Thomas A. O'Donnell, Los Angeles, and J. Frank Drake, Gulf Oil Corporation, Pittsburgh.

Beaty First Salaried President of Institute

Chicago.—With the selection of Amos L. Beaty, New York, as president of the American Petroleum Institute, the industry is assured of an energetic and forceful leader in the new work inaugurated at the twelfth annual meeting here last week.

Judge Beaty has been treasurer of the A. P. I. for the past five years and was formerly and successively general counsel, vice-president, president and chairman of the board of The Texas Company. Later he was chairman of the board of Transcontinental Oil Company, New York, and more recently has been a director and member of the executive committee of Phillips Petroleum Company, Bartlesville.

AMOS L. BEATY

President American Petroleum Institute
His Slogan: "Action."

Realizing the need for a more concentrated effort on the part of the institute and its members in the present crisis, the board of directors deviated from their usual procedure and has made the president's job a paying one. Judge Beaty's salary is to be fixed by the executive committee of the A. P. I. but is generally placed at $75,000 a year.

To help him in the work of the institute, Judge Beaty will have the following officers:

H. R. Gallagher, Shell Oil Company, San Francisco, vice-president at large; Charles F. Roeser, Roeser and Pendleton, Inc., Fort Worth, vice-president for production; Daniel J. Moran, Continental Oil Company, Ponca City, vice-president for refining; W. T. Holliday, Standard Oil Company of Ohio, Cleveland, vice-president for marketing; Axtell J. Byles, Tide water Associated Oil Company, New York, treasurer; W. R. Boyd, Jr., New York, re-elected executive vice-president and Lacey Walker, New York, re-elected secretary and assistant treasurer.

In accepting the presidency of the institute, Judge Beaty said that he was assuming the responsibility with the full appreciation of the enormous task ahead of him and adopted "Action" as his slogan.

Plan Study of Production Methods Under Proration

Chicago.—The subjects of "Well Spacing" and "Developments in Production Methods as a Result of Proration" are to feature the activities during the coming year of the Division of Production of the American Petroleum Institute, it was decided at the meeting of the General Committee, here last week.

Both of these subjects fit admirably into the new program of the Institute calling for definite action of ways and means of putting into practical use the principles of unit operation.

Other subjects to be considered by the Drilling Practice and Production Practice and allied groups of the Division will include: rotary drilling muds, corrosion of field equipment, pipe line coatings, a subject on which a most comprehensive report was made at the meeting this year, equipment performance and other specific operating problems.

However, judging from the amount of interest shown in the subject of "well spacing" at the General Committee meeting, this subject will be foremost on the activities of the Division.

A special sub-committee was appointed by the General Committee, to construct a program on well spacing that can be used as a basis for the study and correlation of data in the several districts of the country. Fred Wood, with Midwest Refining Company at Casper, was selected to head this sub-committee and other members will be appointed at a later date.

In discussing the subject of well spacing before the General Committee, Mr. Wood pointed out that the purpose of the study should not so much take into consideration the economics of it as to determine from existing information how much oil would be produced from a given tract of land with various well spacings.

He further suggested that "a given tract of land" covers a lot of territory and that conditions would not apply in Wilcox, Oklahoma, the frontier of Wyoming and East Texas. He said it would be necessary to endeavor to make an analysis of each individual sand, endeavoring to place a measuring stick on some of the unknown factors of well spacing by applying what information we have regarding the known factors.

Mr. Wood further suggested: "We know what the viscosity of the oil is. We know the thickness of the sand. We have methods of determining what the pressure in the sand might be and we know roughly what the porosity is and can make determinations as to the size. We know the amount of gas in the oil as a result of research work going on in the A. P. I. at present."

It seems, therefore, according to Mr. Wood, through an analysis as suggested and with some physicist on this committee, he could analyze these physical properties in conjunction with existing information as production per well for various well spacings in the various tracts.

Commenting on Mr. Woods' remarks, H. H. Hill, Standard Oil Development Company, New York, said that it would seem to him that there would be some governing factor and if the engineers will go deep enough into the subject they will find some factor that can be worked out and that will apply to different sand conditions.

F. F. Hill, Union Oil Company of California, Los Angeles, suggested that the problem in California is quite different from that applying in the Mid-Continent but that in his opinion the subject of well spacing was most important in both sections.

He pointed out that one of the ideal fields in California, Dominguez, the wells were spaced a little over 600 feet or a little over eight acres to the well and that they have had the best recovery from the same amount of penetration of any field in the state. Mr. Hill also said that they had found where after wells had declined and five spot wells were drilled in between four corner wells and repressured that the decline was checked and the curve straightened out and the wells produced for several years without any appreciable further decline. Therefore it was his suggestion that the well spacing problem will be governed by repressuring plans, the porosity of the sand, the distance of the wells apart and the natural gas pressure and the ability to apply artificial pressure.

It is expected that the several regional organizations of the Division of Production will include this subject in their programs during the coming year and that by the next annual meeting in Houston, November 15, 16 and 17, 1932, the committee will be able to submit considerable correlated data of value.

Roeser Heads Institute Division of Production

Chicago.—Charles F. Roeser, Roeser and Pendleton, Fort Worth, as Vice President for Production of the American Petroleum Institute, becomes chairman of the General Committee of the Division of Production. W. R. Boyd, Jr., is vice chairman and Carl A. Young, with the A. P. I. at Dallas, is secretary.

The following committee members this division were elected or appointed at the meeting here last week:

Elected by Membership:

D. S. Bushnell, Northern Group of Pipe Lines, New York.

C. E. Crawley, Sinclair Consolidated Oil Corporation, New York.

O. D. Donnell, Ohio Oil Company, Findlay, Ohio.

Forest D. Dorn, Forest Oil Corporation, Bradford, Pennsylvania.

W. S. Fitzpatrick, Prairie Oil & Gas Company, Independence, Kansas.

Wirt Franklin, Wirt Franklin Oil Company, Ardmore, Oklahoma.

A. Jacobsen, Amerada Corporation, New York.

L. D. Jurs, Associated Oil Company, San Francisco.

E. A. Landreth, Landreth Production Company, Fort Worth.

F. A. Leovy, Gulf Production Company, Pittsburgh.

M. E. Lombardi, Standard Oil Company of California, San Francisco.

W. L. McLaine, General Petroleum Corporation, Los Angeles.

W. M. O'Connor, The Atlantic Refining Company, Philadelphia.

R. Ogarrio, The Texas Company, New York.

A. W. Peake, Standard Oil Company (Indiana), Chicago.

Robert R. Penn, Penn Oil Company, Dallas.

E. H. Salrin, Tidewater Oil Company, New York.

H. M. Stalcup, Skelly Oil Company, Tulsa.

H. M. Straight, Empire Companies, Bartlesville.

R. Van der Woude, Shell Petroleum Corporation, St. Louis.

Appointed by President Beaty:

E. R. Brown, Magnolia Petroleum Company, Dallas.

W. N. Davis, Phillips Petroleum Company, Bartlesville.

W. S. Farish, Humble Oil & Refining Company, Houston.

J. Edgar Pew, Sun Oil Company, Philadelphia.

L. P. St. Clair, Union Oil Company of California, Los Angeles.

Unit Plan Approval *Not* Result of Sudden Conversion

By HENRY L. DOHERTY

BECAUSE he first suggested the idea of unit operation to the oil industry, the observations of Mr. Henry L. Doherty on this subject are of particular interest at this time. With that idea in view, The OIL WEEKLY asked him for an expression which he has consented to give with the provision that it be made plain that he has only spoken because pressed to do so, and that it is not intended that anything he might say should embarrass the men who have heretofore opposed his plans, and thereby make it "harder for the oil industry to get the relief it so badly needs."—The Editor.

HENRY L. DOHERTY

"IN reply to your request regarding my opinion of the significance of developments at the Chicago convention of the American Petroleum Institute, regarding the operation of pools as units, I must start by confessing that I was as much surprised as was everybody else by the widespread advocacy of this plan, and especially by those who had originally opposed it. While the subject received considerable attention at the convention hall, it received far more attention in the lobbies and in the private meetings.

"I cannot concur that its general advocacy is due to any one of the several reasons given by others. To explain the widespread change of opinion, although each of these reasons played its part, and perhaps single converts were influenced by some one particular reason. I think that the remarkable change of attitude that surprised us all was really due to one thing that nobody spoke of, yet one that will seem obvious to many on a mere suggestion. Is it not probable that it was not a sudden change in opinion of many people rather a delayed expression of opinion by many who long ago had been converted, but did not care to express their opinion until they were sure they would be supported by others.

"Mr. Pew gave the impression from his talk before the convention that the widespread advocacy of the plan and the almost complete absence of opposition was due to the serious situation that confronts us. This, of course, plays its part, but the oil industry has really been in distress for 10 years and things now are worse only in degree. I think a better interpretation of what he said would be that we have had years of punishment and that this is the only substantial remedy that has presented itself and that the acute situation that now exists, and the gloomy outlook, have created a wave of sentiment for the adoption of the plan at the earliest possible moment.

"Outside the convention hall Mr. Pew's paper and his urgent request for unanimous support of the resolution he offered advocating the adoption by the industry of the unit pool plan was attributed by some to the fear he expressed that if we did not unite on some plan for legislation, others would do it for us. It is true that he stated this in his paper and also when he spoke extemporaneously in support of his resolution, but a careful reading of his paper, and his attitude on this subject for quite a long time past, clearly shows that his advocacy of the unit plan is based solely on merit. Feeling as many others do that unless we do something, others will do it for us, would naturally lead him to give greater emphasis to the necessity of unanimous and speedy action, rather than to the merits of the plan. While no one as yet is ready to concede all of the benefits that I believe will result from the unit plan, nevertheless, I think there is now a realization that these benefits will be enjoyed by both the large and the small producers and by both the organized and independent producers, the royalty owners and everybody else. It is now conceded by practically everyone that our recovery of oil has heretofore been, on the whole, 20 per cent or less, and that unit operation of pools will at least double this recovery. It is also conceded that we can save more than half the present cost of drilling and that it will cost far less than half the cost to produce our oil and that practically all of the gas which is now wasted can be saved and can be profitably sold because it can be put to beneficial use.

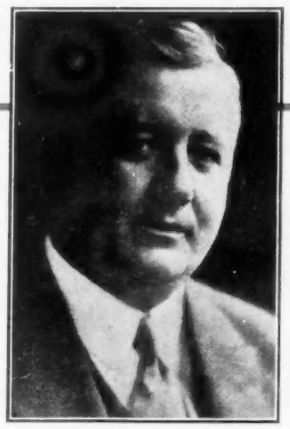
"The problem as to foreign oil is no new thing and this is not an explanation of the change in attitude. Mexico nearly drowned us with oil after the close of the war and we have all been watching Venezuela anxiously for nearly 10 years. There has, of course, been a keener recognition of late that it is hopeless for us to expect to successfully compete with foreign oil under laws which cause us to waste more than we produce, and expend many times as much for drilling and operating than is necessary in the foreign countries where the concessions are so huge in area that they can naturally get the operating advantages which we could only get from unit operation. Many of

(*Continued on page* 19)

Public Education Next Step in Unit Operation Plan

By EARL OLIVER

TO further the important action taken by the American Petroleum Institute at Chicago last week with reference to the unit operation of oil fields, The OIL WEEKLY requested the accompanying discussion from Earl Oliver of Ponca City, Oklahoma. Mr. Oliver has long been active in the furtherance of this type of operation and with certain of his associates in this matter, with whom he advised in the preparation of this article, has been responsible to a large extent for the present growing acceptance of the principles of unit operation in the industry. His discussion of ownership of "reservoir energy" should prove interesting.—The Editor.



EARL OLIVER

IN reply to a request from the editor of THE OIL WEEKLY that we analyze the significance of the American Petroleum Institute action endorsing the "new conception of oil field development" we transmit the following.

The resolution adopted by the A. P. I. Board of Directors is:

"WHEREAS, The prevailing practices in the development of oil and gas pools and the production therefrom based upon the capture by each owner in the pool of as much as he can, as fast as he can, regardless of injury to his neighbor, have been proven to be wasteful of these irreplaceable natural resources, inequitable as between the owners of the common reservoir and demoralizing to the whole petroleum industry.

"NOW, THEREFORE, BE IT RESOLVED, By the Board of Directors of the American Petroleum Institute, that it endorses, and believes the petroleum industry likewise endorses, the principle that each owner of the surface is entitled only to his equitable and ratable share of the recoverable oil and gas and gas energy in the common pool in the proportion which the recoverable reserves underlying his land bear to the recoverable reserves in the pool:

"BE IT FURTHER RESOLVED, In view of the necessity for immediate action to correct the deplorable conditions prevailing, that a committee of this board be appointed to prepare and recommend to the board within 60 days a comprehensive program designed to put into practical operation the principle herein enunciated."

The background for this resolution is to be found in addresses delivered by Messrs. J. Edgar Pew, John R. Suman and W. P. Z. German. Our analysis will be divided into two parts: first—the result to be expected from the general adoption of the principles described; second—the assistance that the American Petroleum Institute will render toward their adoption.

An unfortunate error crept into the wording of the resolution which, if perpetuated, will unnecessarily complicate, if not defeat the effort. After calling attention to that error in the hope that it might be eliminated we shall base our discussion on the "new conception" in harmony with the ideas of those who conceived it rather than according to the wording of the resolution. In the addresses of Messrs. Suman and German it will be found that the term used to describe the propulsive force is "reservoir energy" rather than "gas energy" for the reason that it is the resultant of many variable factors only partially understood. Among its components are hydrostatic head, weight of overburden, and many other factors only vaguely sensed. While its influence in the reservoir is easily ascertained and controlled, its origin is not subject to determination in such a manner as will permit its equitable division among individual landowners. Nature has distributed it over the entire reservoir. Only a part, and sometimes a minor part at that, is stored in the free gas area. In many cases it is a direct hydraulic force. Furthermore large quantities are stored in the gas dissolved in the oil. Assigning it, therefore, entirely to the owner of the lands containing free gas and allowing him to exact tribute for it not only is unfair but is unnecessary.

Mr. Suman, arguing for the new conception in his address at Chicago, stated:

"The determination of the extent of participation in the proceeds from the pool by owners of tracts underlaid by gas offers one of the most difficult problems in establishing principles governing equitable and efficient oil pool development."

Mr. Harry Pennington, arguing against the new conception in the Independent Petroleum Association of America Monthly for September-October, 1931, states:

"But the most serious phase of ownership in situ is that involving the energy of gas and the force of water."

These gentlemen are arguing from opposite sides of the question but both state the most serious obstacle to the new conception is the equitable distribution of the energy contained in the reservoir. Each of them is assuming that this energy must be divided in some manner between the landowners. That, however, does not necessarily follow.

Oil and gas contained in each owner's land are physical

objects subject to ready determination and distribution. Furthermore, they have an established legal status. Each landowner has long been entitled by law to appropriate portions of them. The courts have recognized a type of ownership in relation to them. On the other hand, this newly recognized propulsive force known as reservoir energy has no such legal status. Neither the legislatures nor the courts have yet defined its ownership and they are, therefore, still free to fix a type of ownership upon this reservoir energy that is most beneficial to society. It is not gas. Neither is it oil. But it is a force that acts on both of them and may be separated from them. If the owner of the gas and the owner of the oil are each permitted to appropriate their share of the oil and gas under conditions that do not injure others, they have no right to complain, even although they are not allowed to exact tribute from others for use of their so-called shares of this reservoir energy. This reservoir energy is a force that works within the reservoir but should not be taken from it. It is a status to be maintained rather than a product to be divided.

It is vital to the effective working of this new conception of oil field development that an impractical legal status not be placed upon this newly recognized force. A similar legal mistake was made 50 years ago regarding oil and gas that has almost ruined the petroleum industry. This new conception is meant to correct that old mistake and it would be unfortunate if a like legal mistake were incorporated in this correction.

New Conception Stated

The new conception more accurately stated would divide the oil and gas according to the second paragraph of the resolution but the energy or propulsive force in the reservoir would not be so divided. As previously stated, it is a condition to be maintained rather than a product to be distributed. No landowner should be assigned a definite part of it but all landowners should be protected against any landowner wastefully dissipating it. Under this conception the oil and gas would necessarily be extracted from the reservoir at the point or points in the reservoir that would lend themselves to the most efficient utilization of the propulsive force and would thereupon be delivered to each landowner or his order in proportion to his extractable oil and gas content. If the gas were desired for return to the reservoir as a medium by which to carry additional energy into the reservoir, that gas should be purchased or acquired through some agreement, for the gas owner is, under the law, as much entitled to the immediate delivery of his gas as the oil owner is entitled to the delivery of his oil; but neither is entitled to any special consideration for being required to bring his product out of the reservoir at a point that will best conserve and utilize the propulsive force in the reservoir.

If this construction of rights be accepted we believe the new conception of oil field development will be comparatively easy of application, but if the reservoir energy is to be divided between the respective owners, the determination of relative rights will be most difficult.

Addressing ourselves, then, to the new conception in the form that was originally proposed, we believe its general adoption would be the most important single step that could be taken toward stabilizing the oil industry. It would not be a complete remedy but it would serve as a basis on which other corrective steps could be taken. It would take away the right of one landowner to appropriate another landowner's share of the oil and gas in a common pool. It would re-establish the law of supply and demand as an active working force in the oil and gas industry, which economic law has been largely neutralized and rendered ineffective by the more powerful law of self-preservation—each owner having to extract at once his share of oil and gas, regardless of demand, in order to save it from appropriation by his neighbors.

Its adoption would permit orderly and efficient oil field development. It would make unitization of oil and gas pools easy of accomplishment. It would reduce costs and tend toward elimination of rapid fluctuations of supply. It would insure to the small lease owner his just proportion of the oil and gas from the common pool at the least possible cost, regardless of whether or not he is able to finance its development, after discovery, would be assessed ratably against reservoir content, thus providing a ready means by which the cost of development could be secured and liquidated without the necessity of large capital expenditures. It would insure the small royalty owner his just proportion of the oil and gas from the common pool regardless of whether or not his own small lot is drilled upon. It would in many cases enable the royalty owner to receive subject to his proportion of development costs, eight-eighths of the oil from his land rather than one-eighth, since a lessee to provide for large initial developing costs would not be necessary. These situations, of course, would prevail only where large holdings were sufficiently extensive to warrant initial testing for discovery without calling upon small owners to contribute. After discovery, however, the small owner's share of the cost could be supplied out of his share of the reservoir content.

Assist Small Operator

This new conception of oil field development, if generally applied, would be the greatest assistance to the man of small means who desires to become interested in the oil industry in a legitimate manner; and on the other hand, it would eliminate the necessity of large initial capital expenditures for development purposes by the large companies—for the pool can be developed slowly and made to pay its way out of oil and gas extracted. It would, on the other hand, tend to eliminate of a highly speculative enterprise as its best element with a large following of purely fraudulent promotion schemes as its worst feature.

It would tend toward reduction of costs and efficiency of extraction, without which the American oil industry cannot long continue to survive in competition with cheap foreign oils. All these and many more advantages would arise out of the general adoption of the new conception of oil field development.

Legislative Program

Addressing our attention to the second question, namely: the assistance the American Petroleum Institute will render toward adoption of this new conception, our answer is that it all depends upon the role the American Petroleum Institute elects to play in the endeavor. General adoption of the new conception is solely dependent upon the successful prosecution of a widespread legislative program—both state and federal. The things proposed cannot be done without change in the law of oil and gas. The greatest single factor in whether or not the law shall be changed is the consumer of petroleum products. He outnumbers all the rest. That legislator would be foolish indeed who does not consider the reaction of his constituency. In fact the American system of government is so designed that he must do so if he continues in office. Perhaps the next most powerful groups, because there are so many of them, are the royalty owners and the small

producers. Without the sympathetic co-operation of these several groups, namely: the consumer, the royalty owner and the small producer, any such legislative program as is necessary to put over the new conception would be lost before the fight is started.

It is well to face the fact that in the present state of enlightenment of most members of the several groups mentioned, the new conception of oil field development looks like a monopolistic tendency; and that word alone is sufficient to close the minds of great multitudes against any argument in its behalf. Within the ranks of the Institute itself, and even on its board will this sentiment be encountered. Only after a long and convincing campaign of education presented under the most favorable auspices can there be any hope of enlisting the support of these several groups in behalf of the legislative program above described. This is not strange, for it has taken seven years of controversy in the Institute's ranks to bring it to a position of endorsement and it is by no means unanimous on that position yet.

Is the American Petroleum Institute the most logical agency under all circumstances to lead the campaign of education? We doubt it, for it likewise looks like monopoly to the great groups above mentioned, however unjustified that attitude might be. Efficient and successful as the Institute has been in many of its activities, even its most ardent admirers will not contend that it has given much consideration to its division of public relations, it has not endeavored to establish public confidence except in a most feeble manner. Under the circumstances the spectacle of this presumed octopus (in the public fancy) endeavoring to educate the great multitudes of voters, who are likewise consumers, that this program is one designed for their benefit is not likely to meet with much success. In fact it is more likely to have the opposite effect.

On the other hand, if this campaign of education were led by state and federal governmental agencies, by royalty and independent oil men's associations by recognized scientific societies not directly interested in the results, by conservation agencies, by landowners and every other class and character of organization not directly connected with so-called big business, it is quite possible the voting and consuming public could soon be caused to realize that this program is in reality greatly to its advantage.

American Petroleum Institute co-operation is necessary, but its greatest field of opportunity is in educating its own membership, leaving to other agencies the development of principles and the educational processes in so far as they apply to the great consuming public and so-called independent oil men, both of whom are more disposed than otherwise to look upon the new conception as being antagonistic to their own interests. We repeat, therefore, the assistance the American Petroleum Institute renders in promoting the new conception of oil field development will depend upon the role it elects to play.

Unit Plan Approval Not Result of Sudden Conversion

(*Continued from page* 16)

those who surprised their friends by advocating at the Chicago convention that we all strive for laws providing for unit operation, and recorded their opinion that this was the only effective check on over-production, must have realized for a long time that over-production under our present methods is inevitable and will continue until the time comes when we have so exhausted the oil resources of this country to a point where we are unable to supply our domestic requirements.

"The need for decreasing the number of wells drilled on account of the greater depth and greater cost is simply another excessive and increasing cost forced on us by our present methods. It is, of course, staggering to think of the cost of sinking as many wells as we used to do; and men that could not or would not think in matters that simply involved a principle are compelled to think when our old program demands funds both in excess of what they can furnish and far beyond any return that can be expected. I think there are at least 10 additional reasons besides the ones that I have discussed above that influenced some of the people who seem to be only recently converted to the unit plan. It must be remembered, however, that being converted and recording your conversion in some public manner are two different things. There was a time when to be an advocate of the unit operation of pools simply invited antagonism; and I know that many who are now speaking their approval in 1931 were silent converts two, three, four and five years ago. I think that everybody realizes that whatever else we may do, there is no cure for our ills if we fail to provide for unit operation of pools. If we can all agree on this and get this out of the realm of controversy. We can then dispassionately discuss any and everything else that may be necessary to bring back prosperity to the oil industry.

"Naturally I was pleased to see the universal endorsement given to the operation of pools as units and the assertion of the benefits which would arise therefrom. But I think we might perhaps all get more pleasure and encouragement from the numerous evidences given that many of the important men of the industry are now ready to discuss everything dispassionately and are thoroughly cognizant of the fact that any personalities or personal benefits must be entirely subordinated to the good of the industry as a whole. There is one thing that can be said about the plan of operating our pools as units. We can all feel certain that in advocating this we are making no mistake. It has been urged upon the industry for many years and for a long time every man in the industry, but one, was against it; and everything that could be said against it has been said. Many of the best brains in the industry have literally sat up night after night to think out everything against it, and how best to fight it. The operation of pools as units has the widespread support of the industry at last because it is right—more than that, it is absolutely necessary. While I no longer have any official position or official responsibility for the good of the industry, I am ready and willing to work to bring about in addition to the unit operations of pools, each and every measure which is really for the good of the industry."

The Evaluation of Production Corrosion Losses

Paper for presentation before Twelfth Annual Meeting American Petroleum Institute, Chicago, November 11, 1931

By STANLEY GILL and FRED W. CARL
Gulf Oil Companies, Houston, Texas

FOR purposes of evaluation, the losses which arise from corrosion of petroleum production equipment may be divided into the following classes:

A. *Destruction of equipment*

These losses are concerned only with the actual value of the material which is destroyed as a result of corrosion.

B. *Cost of repairs*

This includes the expenditures which are necessary to overcome losses arising from corrosion, and to restore equipment to its previous condition.

C. *Losses of production*

This includes the value of oil lost during the shutdown periods, and which would be recovered if it were not for corrosion.

D. *Indirect increases in production cost*

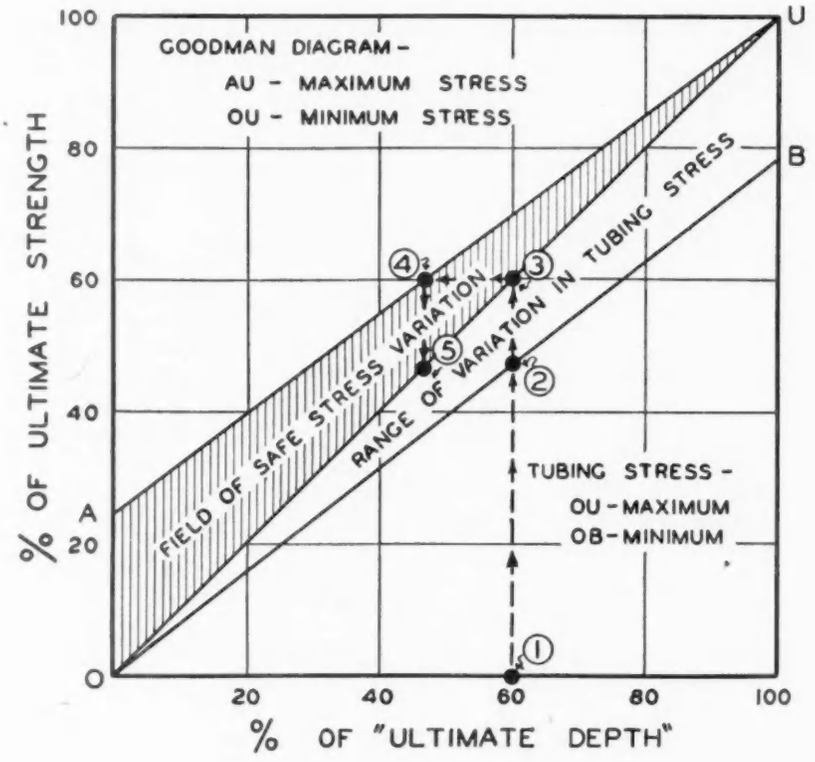
Corrosion results in great increases in lifting costs, aside from those arising directly from the necessary replacement of

Abstract

DETERMINATION of the monetary loss which is suffered by the petroleum industry as a result of corrosion of oil well equipment is of the utmost importance. Obviously, the industry should be concerned with this corrosion, and should engage in the development of methods for its mitigation, to an extent depending upon the magnitude of the economic losses which it entails. This observation applies equally to the individual operator and to the industry as a whole. Sound engineering practice demands that expenditures for corrosion prevention should be based upon a complete understanding of the losses which are brought about by the corrosion.

Within the petroleum production industry there is little or no precise knowledge of the losses which result from corrosion of equipment. This arises from the fact that so little study has been devoted to the development of rational means for evaluation of the losses. As a result most estimates are based upon an inadequate appreciation of the actual nature of the problem, and evidence a tendency to emphasize direct losses of equipment material while minimizing indirect losses, which are in many cases considerably greater than the cost of material corroded. Another common fallacy is shown by the tendency to base estimates on those few wells in a field or territory which have experienced severe corrosion difficulties, to the exclusion of the great majority of wells in which corrosion has been a contributory, but not a primary, cause of well trouble. A corollary of this is the natural human failing of permitting some recent corrosion experience to overshadow the actual situation.

The present paper presents and discusses the various considerations entering into determination of the economic losses which result from corrosion of oil well equipment, and is intended to serve as the basis for a system which will be equally applicable to all producing territories, and which will serve as a common basis for the evaluation and comparison of corrosion losses. That such a system is necessary has been shown by previous efforts to compare data from different territories. Two years ago the Institute's sub-committee on production corrosion decided to collect the available information on corrosion losses by selecting representative engineers in the various territories and providing them with identical data sheets for the compilation of the necessary statistics. When an attempt was made to correlate these data, it was found that of the estimated 22,000,000 dollar per year corrosion loss, 85 per cent occurred in one district where corrosion is commonly considered a very minor part of production cost, while the territory generally conceded to suffer most from corrosion had an estimated loss of only four per cent of the total. On calculating to a per-well basis, the first territory had a loss by corrosion of $1500 per well per year, while the second district lost $340 per well per year. Careful study of the data indicates that the error was in the basic system used in estimating the losses in the first territory. The total loss reported was 66 per cent of the total investment. This means that, on the average, the production equipment in that territory would be entirely destroyed by corrosion in about 15 years. Since nearly half of the wells are in fields of twice that age, the data given would indicate that an enormous amount of equipment had been completely corroded away. This is not at all true; hence there is a serious error in the calculation of annual losses. To arrive at a true estimate of losses directly attributable to corrosion, a much more exact method of attack is required, so that only that portion of equipment depreciation definitely due to corrosion be charged off. The suggestions offered in this paper will assist in developing such estimates.



Fatigue Stress in Tubing.

FIGURE 1

DERIVATION OF FIGURE 1

From the work of Launhardt and Weyrauch, Goodman (*Mechanics Applied to Engineering*, p. 634) constructed the diagram shown in the upper portion of Figure 1. Experimental data show that for a stress alteration from zero to a tension, the limiting stress for safety is one-half the ultimate tensile strength; i.e., a ferrous metal will endure an infinite number of stress variations from no load to one-half its ultimate tensile strength without failure. As the minimum stress is increased, the maximum is raised until at the ultimate they are equal. This is based on tests of prepared specimens where the section considered is smooth and continuous. For variation of the cross-section in the metal the endurance limit is decreased until, for sharp V-threads, the value is one-fourth that for a uniform cross-section. (*The Fatigue of Metals*, Moore and Kommers, p. 141). Since the A. P. I. threadis not a sharp "V," but is truncated, the endurance limit has been arbitrarily set as half-way between that for a smooth section and for sharp V-threads. This locates the point **A** at 25 per cent of the ultimate tensile strength. According to Goodman, the line of minimum stress, **OU**, is at an angle of 45 degrees to the axis. By connecting the points **A** and **U**, the diagram is completed. The ordinates have been plotted in percentages to make the diagram applicable to any numerical value of ultimate tensile strength. This portion of Figure 1 simply shows what minimum stress is safe at any given maximum stress, or vice versa. The lower section of the figure give the stresses which are set up in the tubing under the conditions assumed. For this purpose the following data were selected: A—a fluid of specific gravity equal to 1.00; B—a steel of 75,000 pounds per square inch ultimate tensile strength (A. P. I. specification, grade "C," seamless tubing); C—five-eighths-inch rods in two-inch tubing, three-fourths-inch rods in 2½-inch tubing, and seven-eighths-inch rods in three-inch tubing. From these data the following were computed:

TABLE 1
Fluid Specific Gravity = 1.00

	Ultimate Tensile Strength of Steel = 75,000 Lb. Per Sq. In.		
1. Size of rods	⅝	¾	⅞
2. Size of tubing	2	2½	3
3. Weight per foot tubing—minimum load per foot	4.60	6.40	9.20
4. Weight per foot fluid	1.23	1.84	2.80
5. Maximum load per foot	5.83	8.24	12.00
6. Cross-sectional area of metal at root of threads	0.801	1.20	1.82
7. Ultimate load	60,000	90,000	136,700
8. Ultimate depth	10,290	10,930	11,380
9. Tubing weight load at ultimate depth	47,250	70,000	104,700
10. (9) ÷ (7)	0.788	0.788	0.766

1, **2**, **3**, and **4** are self-explanatory.

5 is the maximum load per foot of depth, being the total of tubing weight and fluid weight.

6 is the cross-sectional area of metal at the root of the first perfect thread, the weakest joint on the tubing.

7 is the ultimate total load this cross-section **6** will support; ultimate strength divided by area **6**.

8 is the maximum depth which can be reached without exceeding the strength of the steel; ultimate load divided by load per foot; **7** divided by **5**.

9 is the tubing weight load at ultimate depth **8**; ultimate depth **8** multiplied by **3**.

10 is the ratio of tubing weight load, the minimum stress, to the total load, the maximum stress; or as shown is **9** divided by **7**.

By definition, the ultimate depth corresponds to the ultimate tensile strength of the steel, which locates the point representing it vertically below **U**. Since the three valves of **10** are very close, one line is used to represent them, locating the point **B** at 78 per cent of the ultimate strength of the steel. Both abscissa and ordinate are plotted in percentage, so that the graph is applicable to any steel, regardless of the numerical value of its ultimate tensile strength and to any combination of rods, tubing, and fluid where the ratio **10** is 0.78. Other combinations of rods, tubing, and fluid will change the slope of **OB**, and each combination will have a different numerical value for the "ultimate depth," **8**, as is shown by the data given in the table.

equipment. Under this head may be included the following costs which are caused by corrosion but seldom charged against it:

1. Water troubles resulting from punctures of casing.
2. Extra pulling jobs to replace cups cut by accumulation of corrosion products from rods or tubing.
3. Decreased pump efficiency due to corrosion of working barrels and of balls and seats, entailing an increased power consumption.
4. Increased cost for treating the emulsion formed by excessive fluid slippage past corroded balls and seats.

E. *Water flooding of sands*

Admission of water through corroded casing has resulted in water flooding of sands in certain fields.

F. *Accelerated production decline*

Corrosion of certain items of well equipment results in rapid decline in production rates, and thus diminishes the total quantity of oil which is recovered from a well. In extreme cases corrosion may result in the loss of a well before it has completely drained the surrounding sand, and thus makes necessary the drilling of more wells than would otherwise be necessary to drain a field.

The several sources of loss are discussed in some detail below, and the factors which enter into the evaluation of each are described.

Destruction of Equipment

The most obvious source of corrosion loss is in the destruction of casing, tubing, tanks, and other equipment. For this reason the importance of actual depreciation of material is usually over-emphasized in considering the corrosion problem. Actually, of course, the value of the corroded equipment constitutes a very great source of loss. It is not however, of greater importance than are other, less considered phases of the problem. In a sense, the apparent simplicity of estimating the losses which result from destruction of material results in inaccurate estimates of corrosion losses. If a piece of equipment fails by corrosion after 10 years of service, it is exceedingly simple to estimate the annual corrosion loss as one-tenth of its initial value. Such a procedure is, however, entirely erroneous, and gives an exaggerated value for the losses, since it fails to take into account normal depreciation and obsolescence. If, for example, normal mechanical wear would have resulted in failure of the equipment in question after a service of approximately 10 years, the corrosion has not resulted in any loss of material whatsoever. In the same way, if the discarded equipment has any junk value, this junk value should be credited against the corrosion losses. Upon these considerations, the following simple means of evaluating losses of material are predicated:

$$\left[\begin{matrix}\text{Actual loss}\\ \text{of}\\ \text{material}\end{matrix}\right] = \left[\begin{matrix}\text{Depreciated}\\ \text{value at}\\ \text{time of failure}\end{matrix}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovering}\\ \text{value}\end{matrix}\right] \qquad (1)$$

In order to determine the "depreciated value of equipment at time of failure," it is necessary that a method be devised for determining what life could be expected from the specific item of equipment if it were not subject to any corrosive attack. This immediately establishes a depreciation rate from which the "depreciated value of equipment at time of failure" is determined. Methods by which the life expectancy of each class of petroleum production equipment may be determined are detailed below:

Casing

In estimating the service life which would be expected from casing strings, if it were not for corrosion difficulties, it is necessary to differentiate between inside and outside casing strings.

Outside casing strings should last for the life of the well; i.e., the casing should remain in serviceable condition until production has declined to a point where further operation of the well is not economically justifiable. Because of the difficulty and expense of recovering outside casing, it can properly be considered as possessing no value at the expiration of this period. Instances in which a profit can be derived from the recovery of outside casing are not sufficiently frequent to invalidate the above reasoning. From the characteristics of a field and from the rate of production decline, the probable ultimate economic life of a well, from the production standpoint, can be calculated; and this figure can be applied directly as a normal life expectancy for outside casing. Therefore, the actual loss of material which results from corrosion failure of an outside casing string may be expressed as follows:

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] = \left[\left\{\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{casing}\end{matrix}\right\} \times \left\{1 - \frac{\text{(Age at time of failure)}}{\text{(Estimated economic life of well)}}\right\}\right] = \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (2)$$

Inside casing strings, on the other hand, are in most cases entirely recoverable, and the value for re-use is practically equal to the value of new casing. The service life is dependent only upon the number of times the material is re-used. Hence, for all practical purposes, it may be assumed that the value of inside casing results in a loss of material equal to the value of new material. The formula for loss by corrosion of inside casing may be expressed as:

$$\left[\begin{matrix}\text{Actual loss}\\ \text{of}\\ \text{material}\end{matrix}\right] = \left[\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{casing}\end{matrix}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (3)$$

Corrosion is not, of course, the only cause of casing failure; but the other causes, such as cutting of casing by wire lines, wear by tubing, shifting of formation, etc., cannot properly be considered as characteristic, even of one field. They should, therefore, be classed as well troubles, and the resultant losses treated as operating expense.

Tubing

Corrosion shortens the life of tubing in the following ways:

A. Pitting of the tubing with the development of tubing leaks.

B. Thinning of the tubing walls by corrosion. This results in reduction of the metal cross-section, and consequent loss of strength of the tubing.

C. Corrosion fatigue, resulting in a reduction of endurance limit and in mechanical breakage of tubing under load conditions which would not otherwise result in failure.

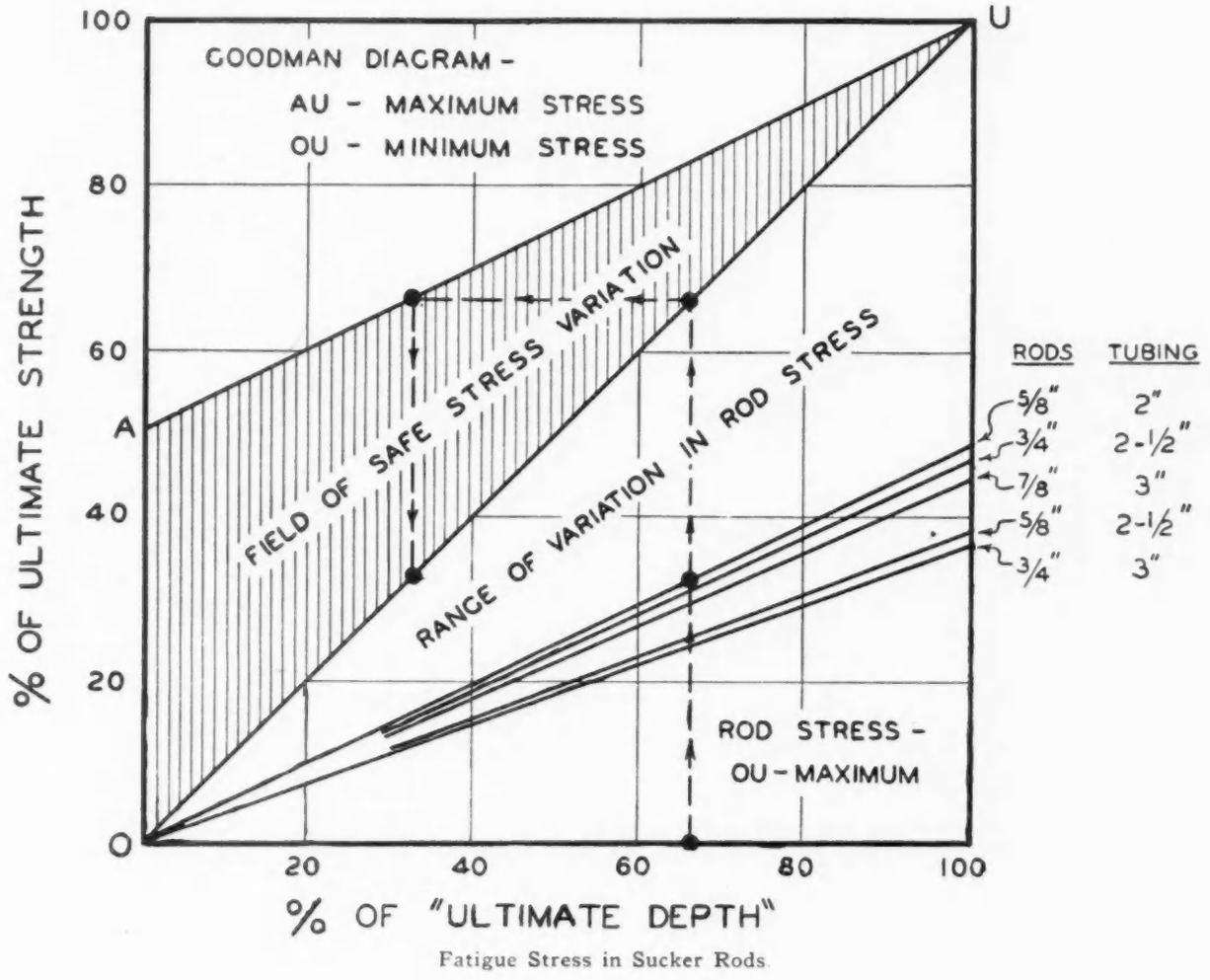
D. Mechanical wear (worn threads) resulting from corrosion of other items of well equipment. Corrosion of working barrels, balls and seats, etc., makes it necessary to pull tubing more frequently than would be the case if such corrosion were absent.

If these factors of depreciation were not present, i.e., if there were no corrosion, the ultimate life of a tubing string would be dependent upon:

A. Wear caused by pulling to replace worn working parts within the well.

B. Fatigue failures due to the alternate stress set up in the tubing by normal pumping operations.

Even in a well in which absolutely no corrosion is experienced, it is necessary to pull tubing periodically to replace worn standing valves and working barrels. The frequency of such pulling will depend upon the life expectancy of both standing valves and working barrels, and the tubing will



Fatigue Stress in Sucker Rods

FIGURE 2

DERIVATION OF FIGURE 2

The upper portion of Figure 2 is obtained exactly as is that of Figure 1. The value of **AO** is taken as 50 per cent of the ultimate tensile strength, assuming that the body of the rod, its smallest diameter, is the weakest section. This is justified by field experience. The special design of thread used in A. P. I. sucker rods eliminates the sharp bottom of the "V," reducing the stress concentration materially. With a sharp V-thread, such as was formerly used, the critical cross-section would be found at the base of the thread on the pins, and **OA** would be reduced to 12.5 per cent of the ultimate tensile strength of the steel. The data used in calculating the lower portion of the curve are given in Table 2.

TABLE 2

Specific Gravity = 1.00

Ultimate Tensile Strength = 100,000 Lb. Per Sq. In.

1. Size rods	5/8	5/8	3/4	3/4	7/8
2. Size tubing	2	2½	2½	3	3
3. Weight per foot rods—minimum load per foot	1.16	1.16	1.64	1.64	2.21
4. Weight per foot fluid	1.23	1.90	1.84	2.86	2.80
5. Maximum load per foot	2.39	3.06	3.48	4.50	5.01
6. Cross-sectional area of rods	0.307	0.307	0.442	0.442	0.601
7. Ultimate load	30,680	30,680	44,180	44,180	60,130
8. Ultimate depth	12,830	10,020	12,700	9,830	12,030
9. Rod weight load at ultimate depth	14,880	11,630	20,820	16,110	26,600
10. (9) ÷ (7)	0.485	0.379	0.472	0.364	0.443

The calculations are made exactly as in the case of tubing, and the ratios 10 used as limiting values for the minimum stresses at the "ultimate depth." The use of the figure is identical with that of Figure 1.

have to be pulled whenever it becomes necessary to replace the shorter-lived of these two. Methods for determining the normal life expectancy of working barrels and of balls and seats are detailed later. Thus, it is possible to determine, for a given territory and depth of well, how often it would be necessary to pull tubing if there were no corrosion. However, this is not sufficient to establish the normal life expectancy of a tubing string, since there are no data which define the number of times tubing threads may be made up and broken down before becoming worn to a point where mechanical failure is imminent.

In normal pumping operation, a tubing string is subject to cycles of stress variation to a number of several millions per year. On the up-stroke of the sucker rods, the tubing carries only its own weight; on the down-stroke of the rods, this weight is increased by the weight of the fluid column. This establishes a stress condition which will result in fatigue failure, provided the range of stress variation is beyond the endurance limit of the pipe material. The conditions under which fatigue failure of tubing would occur, if it were not for the influence of corrosion, are defined in Figure 1. This diagram combines two distinct graphs, which are superimposed for convenience. The first of these, which is represented by the portion above the line **OU**, is the familiar Goodman diamgram, which defines the safe range of tensile stress variation within which fatigue failure will not occur, regardless of the number of cycles. The second portion of the diagram, which lies below the line **OU**, defines the range of variation in tensile stress at the root of the threads of the top joint of tubing. The derivation of Figure 1 is discussed below. The "ultimate depth" is that depth at which the stress set up within the tubing, by the weight of the tubing and the fluid, is equal to the ultimate tensile strength of the tubing material; hence, it is obvious that at greater depths the tubing would part under the direct tensile load of the weight of tubing and fluid. The magnitude of the "ultimate depth" is determined by:

A. *The size of tubing*

This determines the cross-sectional area of steel which is available to support the load, the weight of the tubing string, and the volume of fluid.

B. *The size of sucker rods*

This, together with the inside diameter of the tubing, determines the volume of fluid.

C. *Specific gravity of the fluid*

This determines the weight of the fluid oclumn.

D. *Ultimate tenside strength of the pipe material*

Figure 1 is plotted for the following sizes of tubing and rods:

Size of Tubing (Inches)	Size of Rods (Inches)
2	5/8
2½	¾
3	⅞

and for fluid of specific gravity equal to 1.00. Variation in any of the above factors, excepting the ultimate tensile strength, will influence the slope of the line **OB**; the proportions of the rod and tube combinations for which this calculation is made are such that one line is equally representative of all three conditions.

The use of the diagram is illustrated by an example, the solution of which is shown in Figure 1. For a tubing string having a length equal to 60 per cent of its "ultimate depth, **1**, the minimum stress, **2**, is 46.6 per cent of the ultimate strength of the tubing material, while the maximum stress, **3**, is 60 per cent of the ultimate strength of the tubing material. To determine if this range of stress variation is within the fatigue endurance limits of the material, a horizontal line is carried from **3** to **4**. For a material subjected to a maximum stress equivalent to this value, the safe limit of stress variation is represented by the distance **4** to **5**. In the case selected this safe range of stress vartiation is exactly equal to the range of stress variation to which the tubing is subjected, and it is concluded that for the conditions represented any string of tubing having a length greater than 60 per cent of the "ultimate depth" will be subject to fatigue failure, even in the absence of corrosion. There are two indeterminable factors which may readily increase the severity of the range of stress variations. The first of these is "water hammer" or "pound" due to lag in closing of the standing valve, which will impose an impact on the tubing due to the sudden checking of the flowing liquid. The second is lifting of the tubing by the sucker rods through pump cup friction.

Application of the principle embodied in Figure 1 to the determination of corrosion losses is based upon the fact that in a tubing string which is within the safe endurance limit there should be no fatigue failures; hence, any failures which occur in such strings may be attributed to corrosion. Under corrosive conditions, the range of safe stress variation is reduced by approximately 50 per cent. For the conditions considered above, therefore, the safe depth under corrosive conditions would be only 30 per cent of the ultimate depth. For the tubing sizes used here, the safe depths under corrosive conditions are found by this calculation to be in the neighborhood of 3000 feet. Field practice indicates that excessive breaks are obtained when using plain-tubing at depths greater than this. In relation to the cost entailed by corrosion of tubing, it may be definitely stated that mechanical breakage of a tubing string, which is not long enough to be stressed beyond its endurance limit, is attributable to corrosion. The actual value of material lost, either by such breakage or through destruction by corrosion, may be determined from the following formula.

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] = \left[\left\{\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{tubing}\end{matrix}\right\} \times \left\{1 - \frac{\left(\begin{matrix}\text{Age at}\\ \text{time of}\\ \text{failure}\end{matrix}\right)}{\left(\begin{matrix}\text{Life of}\\ \text{tubing not}\\ \text{subjected to}\\ \text{corrosion}\end{matrix}\right)}\right\}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \quad (4)$$

For reasons outlined, the "life of tubing not subjected to corrosion" cannot be directly determined. An expedient for arriving at an approximation of this factor may be applied to fields which are of sufficient age to have produced failures of tubing strings which were not exposed to corrosive attack. A study of well records of any such field will show a wide variation in the service life of tubing strings from different wells; but after elimination of cases definitely attributable to corrosion, accident, unusual operating conditions, improper selection of material, etc., it will be found that a large proportion of the remaining strings shows a fairly uniform service life. Obviously, the range of life for these strings will depend upon the care taken in culling the records to discard cases where abnormal or subnormal service lives are indicated. Having determined the general average life of tubing strings in normal service not subjected to any corroding action, the loss by corrosion for any other tubing string can be calculated from equation (4). For example, in the most corrosive field of the Texas Gulf Coast there have been many failures of tubing strings in less than one year, and more in from one to two years. Careful study of the records indicates that, in spite of this short life for most tubing, there are original tubing strings in service which have had no failures in 12 to 13 years. Hence the life of tubing not subjected to corrosion is greater than 13 years. Where this expedient for the determination of "life of tubing not subjected to corrosion" can be applied, it is possible to determine the actual value of material lost through

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corrosion by the use of formula (4). If this is not possible, an approximation may be obtained from:

$$\left[\begin{matrix}\text{Actual loss}\\ \text{of}\\ \text{material}\end{matrix}\right] = \left[\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{tubing}\end{matrix}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (5)$$

Sucker Rods

The determination of losses entailed by corrosion of sucker rods is based upon considerations identical to those which apply to tubing. Thus, the formula for determining the actual value of lost material becomes:

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] = \left[\left\{\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{rods}\end{matrix}\right\} \times \left\{1 - \frac{\left[\begin{matrix}\text{(Age at}\\ \text{time of}\\ \text{failure)}\end{matrix}\right]}{\left[\begin{matrix}\text{(Life of}\\ \text{rods not}\\ \text{subjected to}\\ \text{corrosion)}\end{matrix}\right]}\right\}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (6)$$

Determination of the "life of rods not subjected to corrosion" is subject to the same difficulties which were found to prevail in the case of tubing, complicated by the fact that it is necessary to pull rods to replace traveling valve balls and seats and pump cups, jobs which do not require that the tubing be pulled. Therefore, sucker rod threads are subjected to more frequent making and breaking than are those of the tubing in the same well. As in the case of tubing, it would be possible to estimate how many times sucker rods would have to be pulled if there were no corrosion. However, there are no data on the resistance of sucker rod threads to this type of wear. Hence, an expedient similar to that described for tubing must be resorted to in estimating the "life of rods not subjected to corrosion." Where the expedient cannot be applied, the following approximation is justifiable:

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] = \left[\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{rods}\end{matrix}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (7)$$

Sucker rods are subject to more severe fatigue stress conditions than is tubing, since the range of stress variation is far greater. On the down-stroke the rods carry only their own weight, while on the up-stroke the weight of the fluid column is added. This range of stress is still further increased by acceleration loads. The safe fatigue endurance range for sucker rods is shown in Figure 2, which is identical in form with Figure 1. This figure takes into consideration only the dead-weight loads of rods and fluid, and neglects acceleration loads, the magnitude of which is dependent upon well operating conditions. The example solved in the figure shows that, for five-eigths-inch rods, two-inch tubing, and a fluid of specific gravity 1.00, strings having a length of not more than 65 per cent of the "ultimate depth" are within the safe fatigue endurance range. In applying this criterion, considerable care must be exercised to evaluate the influence of corrosion in accelerating fatigue failure. Other factors which may materially reduce the endurance range are: friction of rods against tubing, cup friction, impact loads, kinked rods, dirty or damaged threads, etc. By keeping these factors in mind, it is possible to determine what proportion of the mechanical breakage which is experienced in sucker rod strings may be attributed to the influence of corrosion fatigue, and to obtain data necessary for the application of formulae (6) and (7.)

Working Barrels

For working barrels it is improbable that any exact mathematical method could be established whereby the true life expectancy, in the complete absence of corrosion, might be established. This is evident when one considers that the mechanical wear on working barrels is influenced, to a greater or lesser extent, by:

a. Speed of pumping.
b. Type of pump cups.
c. Lubricating value of fluid.
d. Seal formed by fluid. This is a function of the gravity and viscosity.
e. Presence or absence of water.
f. Degree of emulsification, and type of emulsion formed.

The above list does not include all of the variables, but should be sufficient to demonstrate the hopelessness of attempts at direct evaluation. Hence, it is necessary to adopt an expedient similar to that used for tubing and rods. This involves a study of records of service life of working barrels in the field or territory under consideration. After eliminating cases of rapid failure, it will be found that a considerable proportion of the barrels has given approximately the same (maximum) service, and that there are only isolated instances of barrel lives greater than this figure. This service period can, therefore, be accepted as the life of a working barrel in the given field, if not subjected to corrosion, sand-cutting, or other depreciating factors aside from normal wear. Application of this method is simplified, in the case of working barrels, by the fact that the life expectancy, even in the absence of corrosion, is comparatively short; hence, adequate data are readily obtainable. Once this factor has been obtained, the direct loss of working barrel material by corrosion may be computed from:

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] - \left[\left\{\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{barrel}\end{matrix}\right\} \times \left\{1 - \frac{\left[\begin{matrix}\text{(Age at}\\ \text{time of}\\ \text{failure)}\end{matrix}\right]}{\left[\begin{matrix}\text{(Life of}\\ \text{barrels not}\\ \text{exposed to}\\ \text{corrosion)}\end{matrix}\right]}\right\}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (8)$$

Since all factors in this equation are readily determinable, it should never be necessary to resort to an approximation.

There are two factors which must be very carefully considered in assigning a cause to failure of working barrels in a period shorter than the life expectancy in the absence of corrosion. First, a working barrel may be rendered absolutely worthless by corrosion to an extent which would be insignificant in the case of tubing or rods, since the slightest pitting of a barrel will result in excessive wear of cups. Second, premature failure may be caused by factors other than corrosion, among which may be recognized scoring by sand carried in the well fluid, and rapid wear of cups through changes in the plunger travel.

Balls and Seats

Because of the low cost of balls and seats, the losses of actual material which result from their corrosion are so slight as to be practically negligible. Since there is usually no scrap recovery value, the loss is equal to the initial cost. It would, of course, be possible to establish a normal depreciation rate for balls and seats, and thus compute the material losses more exactly; but the intrinsic value of the material is so small that the effort is not justified.

Although the material loss is insignificant, ball and seat failures contribute largely to indirect losses; and it is essential that corrosion failures be differentiated from mechanical failures, so that these indirect losses may be correctly apportioned. This is discussed in detail later.

Production Pipe Lines

With the exception of isolated cases of mechanical damage, flow lines, lead lines, and field lines are subject to no other form of deterioration than corrosion. For this reason, it is relatively simple to calculate the losses, keeping in mind the fact that such lines are normally laid of used pipe, so that the initial cost used should be that of second-hand pipe. The corrosion loss can be calculated from:

$$\left[\begin{matrix}\text{Actual}\\ \text{loss of}\\ \text{material}\end{matrix}\right] = \left[\begin{matrix}\text{Initial}\\ \text{cost of}\\ \text{pipe}\end{matrix}\right] - \left[\begin{matrix}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{matrix}\right] \qquad (9)$$

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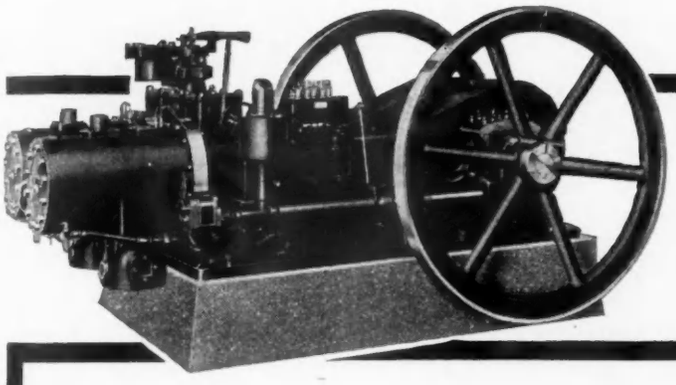

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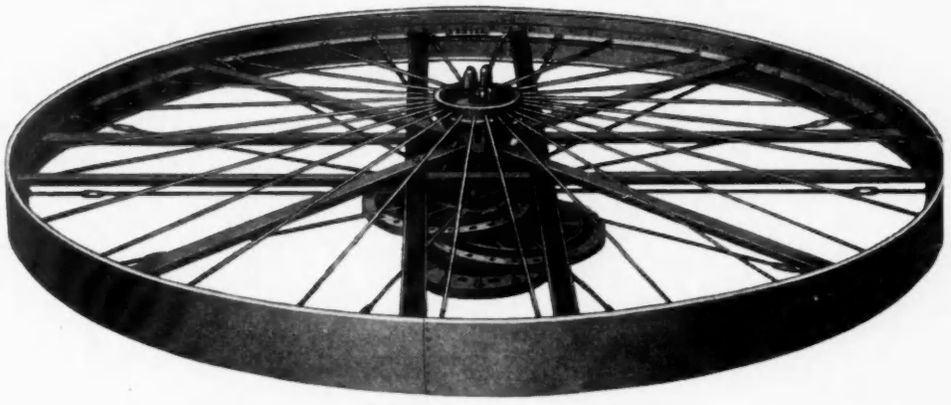

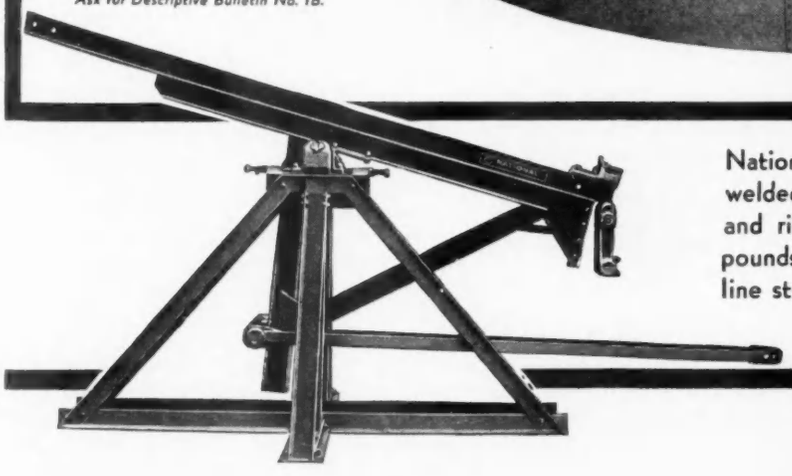

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the corrosion of the metal and by the mechanical damage incident to moving. As it is impossible to evaluate the latter factor, because of the many variables involved, the loss of value must be approximated as before:

$$\begin{bmatrix}\text{Actual loss of material}\end{bmatrix} = \begin{bmatrix}\text{Initial cost of tank}\end{bmatrix} - \begin{bmatrix}\text{recovery Scrap value}\end{bmatrix} \quad (10)$$

Cost of Repairs

In addition to the actual loss of material described in the preceding section, each failure of production equipment necessitates certain costs to restore this equipment to its previous condition. Obviously, corrosion should be charged with its share of these costs of repair. In some cases, it will be apparent that corrosion is entirely responsible for the equipment failure, and the entire cost of repairs should be charged to corrosion. This is represented by corrosion puncture of tubing. In a majority of instances, the cost of repairs must be distributed between corrosion and normal depreciation, in accordance with the criterion established in the preceding section of this paper. For example, a fatigue failure in a string of sucker rods might be due to corrosion fatigue. Calculation establishes that 50 per cent of the normal service life of rods, under similar conditions, has been obtained. One-half the cost of repairs should be charged to corrosion and one-half to depreciation. A similar method for dividing the cost of repairs can be used, even where it is impossible to determine the exact cause of failure. Difficulties in segregating the cause of failure of working barrels have been described, and the method for charging the loss of material detailed. An identical method can be used to distribute the cost of repairs in any such cases where direct determination of the cause of failure is impossible.

Loss of Production

As is generally recognized, production lost through shut-down of wells is properly chargeable as a part of the cost of repairs. Considerations identical to those which were discussed in connection with the apportionment of repair costs govern the decision as to the percentage of lost production which must be considered as corrosion expense.

It should be pointed out that determination of the loss of production which is occasioned by shutting down a well is not a simple matter. The common practice of charging a pro-rata share of a well's normal daily production is, in most cases, entirely erroneous. Figure 3 represents types of production curves which have been frequently observed in actual practice, and which involve entirely different effects as concerns loss of production. Case 1 (Figure 3) is the simplest: A well, producing at the rate of **A** barrels per day, is shut down at the time **R**, and put back on production at the time **S**. The production rises immediately to rate **A**; hence, there has been lost the quantity of oil which would have been produced in the time **R, S,** if the well had continued producing at the rate **A**. A more usual condition is presented as case 2. Here, when the well is put back on production at the time **S**, the production rate rises to a value **B**, higher than rate **A**, which prevailed before the shut-down. From **B**, the rate gradually declines to the original rate **A**. In many cases of short shut-downs the total quantity of oil recovered under the conditions represented in case 2 will be the same as would have resulted had there been no shut-down. Case 3 represents a very common field condition: resulting from cup wear, valve leaks, thread leaks or corrosion of tubing, etc. Production begins to decline from the initial rate **A**, at time **P**, and drops to a value **C** before the well is shut down for repairs. In actual experience the period **P, R** is usually found to extend over about three days. In case 3, therefore, the loss of production is greater than that represented by the actual length of the shut-down. Combinations of cases 1, 2, and 3 are, of course, commonly encountered.

The above discussion demonstrates the difficulty of determining the relationship between shut-down periods and loss of production. From the practical standpoint, an evaluation of this loss of production can be arrived at only through actual gaging of individual wells over periods of several days before and after shut-downs of varying duration. If this is done, representative values can be arrived

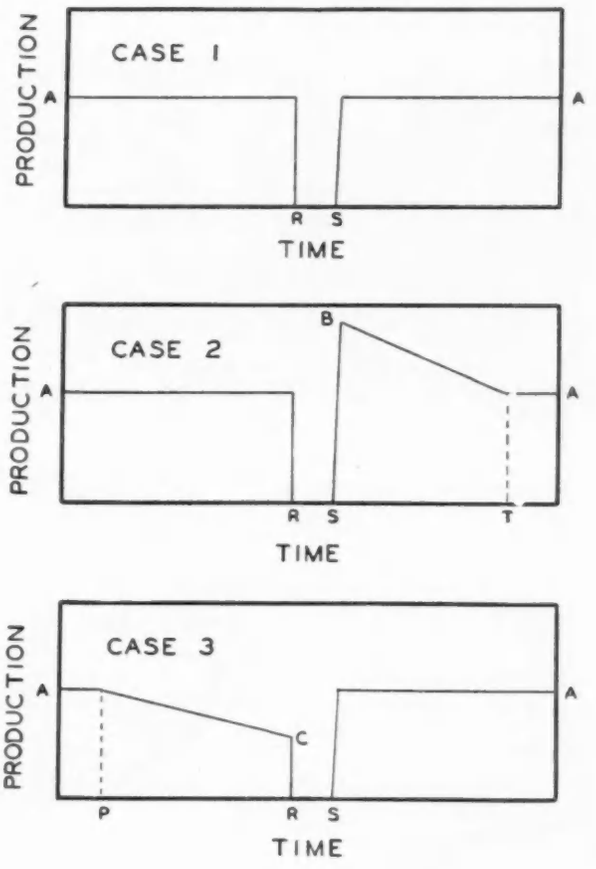

FIGURE 3

at for a given field or territory. These values will define, for the territory in question, the effect upon loss of production of:

a. Length of shut-down period.
b. Rate of fluid production.
c. Rock-pressure of producing formation.

Thus, reasonably accurate estimates of loss of production can be made.

The importance of correct evaluation of loss of production as related to costs of corrosion merits careful consideration. This item should always be determined in any study of the economics of production corrosion. Its importance may be illustrated by the extreme case of corrosion of screen pipe in wells of the Texas Gulf Coast, where loss of production represents more than 50 per cent of the total loss entailed by the corrosion.

Indirect Increases in Production Costs

Any attempt to evaluate the losses entailed by corrosion of well equipment, must, necessarily, take into account the great increases in production expense which may result indirectly from damage of equipment by corrosion. Frequent-

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Valve plates were in constant slow rotation. This is proved by the high polish on the back of the valve plates, where the buttons rested. The spring buttons themselves were somewhat reduced in diameter, and they also showed wear where they came in contact with the valve guard.

Eleven of the eighteen springs showed no perceptible wear The other seven showed wear, and had lost a coil or two. All springs, however, were sufficiently strong to exert force on the valve plates. In other words the valve was functioning perfectly when removed.

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ly these losses occur in fields where corrosion of equipment is not at all rapid; hence, are not generally charged against corrosion. It is difficult to determine the magnitude of these indirect losses, but their importance must be recognized, since it has been found that substantial savings may be effected by their mitigation. Some of the more important sources of the indirect losses are the following:

Casing Punctures

Normally, failure of outside casing strings result from external corrosion at water strata. This permits water to enter the well, increasing the quantity of fluid to be lifted, accelerating corrosion of well equipment, and eventually flooding out the well. All of the increase in operating expense produced should be charged to corrosion. Likewise, any repairs necessary to maintain production should be treated as corrosion expense.

Wear on Tubing and Rod Threads by Excess Pulling Jobs

Where well equipment is subject to corrosion, it is necessary to pull rods and tubing frequently. The effect of the resultant wear on threads has been discussed previously, but is mentioned here since it is an indirect result of corrosion.

Wear of Cups

Corrosion causes abnormally rapid wear of pump cups by pitting and roughening of working barrels and also by the abrasive effect of products of corrosion obtained from tubing and sucker rods. The cost of the resultant pulling jobs should properly be charged to corrosion expense.

Lowered Efficiency of Well Pumps

Fluid slippage in working barrels and balls and seats is produced by corrosion of these pump parts. The consequent lowering of pump efficiency increases the power consumption and cost.

Well Accidents

Occasionally, corrosion fatigue or wasting of the metal causes parting of rods or tubing. Frequently this will necessitate a fishing job which should be charged as a corrosion loss.

Increase in Emulsion Formation

It is a recognized fact that failure of pumping equipment to function perfectly results in increased formation of emulsions. When such failures are caused by corrosion, the extra treating expense should be considered a corrosion loss.

Water Flooding of Sands

Instances have been noted where productive formations have been flooded with water from overlying water strata. Most of these are in the older fields, and there is some question as to the actual cause of the water flooding. The condition may be due to corrosion puncture of the outside casing, or to imperfect casing seats. Records of the actual operations in setting the casing are usually lacking, so that it is impossible to determine exactly which cause is responsible for the trouble. If it could be established that corrosion of the casing is responsible for the water flooding, then all of the excess operating expense made necessary by the presence of water should be charged to corrosion.

Exact evaluation of the losses which arise from such water flooding is extremely difficult, particularly in fields where water, in addition to that leaking through or past the casing, is initially present in the formation. The only method for estimating the damages arising from such water flooding is through detailed study of production decline curves of wells in the area in question. From such studies it may be found that admission of the water has resulted in a sharp increase in the quantity of water produced by the field and in a concurrent reduction of the rate of oil production. Where this water flooding can be definitely and positively attributed to corrosion puncture of casing, all of the lost production can be charged as a corrosion expense.

Accelerated Decline in Production

Water flooding, which has just been considered, is an instance in which corrosion serves to accelerate the rate of decline of production. An even more striking example is afforded by the corrosion of oil well screen pipe in the fields of the Gulf Coast. The effect of this corrosion has been evaluated to a certain degree by comparison between groups of wells equipped with corrosion-resistant screen pipe and groups of wells in which the screen pipe was subject to corrosion. This comparison has shown that the decline of production over a period of years is approximately 30 per cent more rapid in the wells in which corrosion of screen was experienced.

Where such an accelerated decline of production can be definitely attributed, in whole or in part, to the effects of corrosion, the consequent loss of production represents an economic loss which should be considered in evaluating the effects of corrosion.

Loss of Wells

In the foregoing discussion there have been mentioned several types of corrosion trouble which may, in extreme instances, result in the loss, as a productive unit, of a well before it has completely drained the surrounding sand. The following should be particularly noted in this connection:

A. Junking of wells due to mechanical failure of well equipment as a result of corrosion fatigue or wasting of metal.

B. Flooding of productive formation by water admitted through corrosion punctures in casing.

C. In specific relation to the Gulf Coastal fields, strainer corrosion is found to limit the ultimate recovery which can be obtained from a well.

The evaluation of corrosion losses of this type presents considerable difficulty, as it should be based upon the depreciated productive potentialities of the well, which can be determined only by thorough study of the decline characteristics of the area in question. The importance of such failures must not, however, be overlooked, as they serve in some areas to make necessary the drilling of a large number of wells in order to obtain complete recovery from a productive area.

Summary

Up to the present time there has been developed no uniform system whereby the magnitude of the economic losses arising from corrosion of production equipment can be determined. The need of such a system is demonstrated by the fact that one of the writers of this paper has endeavored, over a period of two years, to reconcile estimates made by members of the American Petroleum Institute sub-committee on production corrosion. Correlation is impossible, because a common basis for evaluation was not used.

The general principles which must be applied in evaluating losses resulting from corrosion of production equipment are discussed under the following headings:

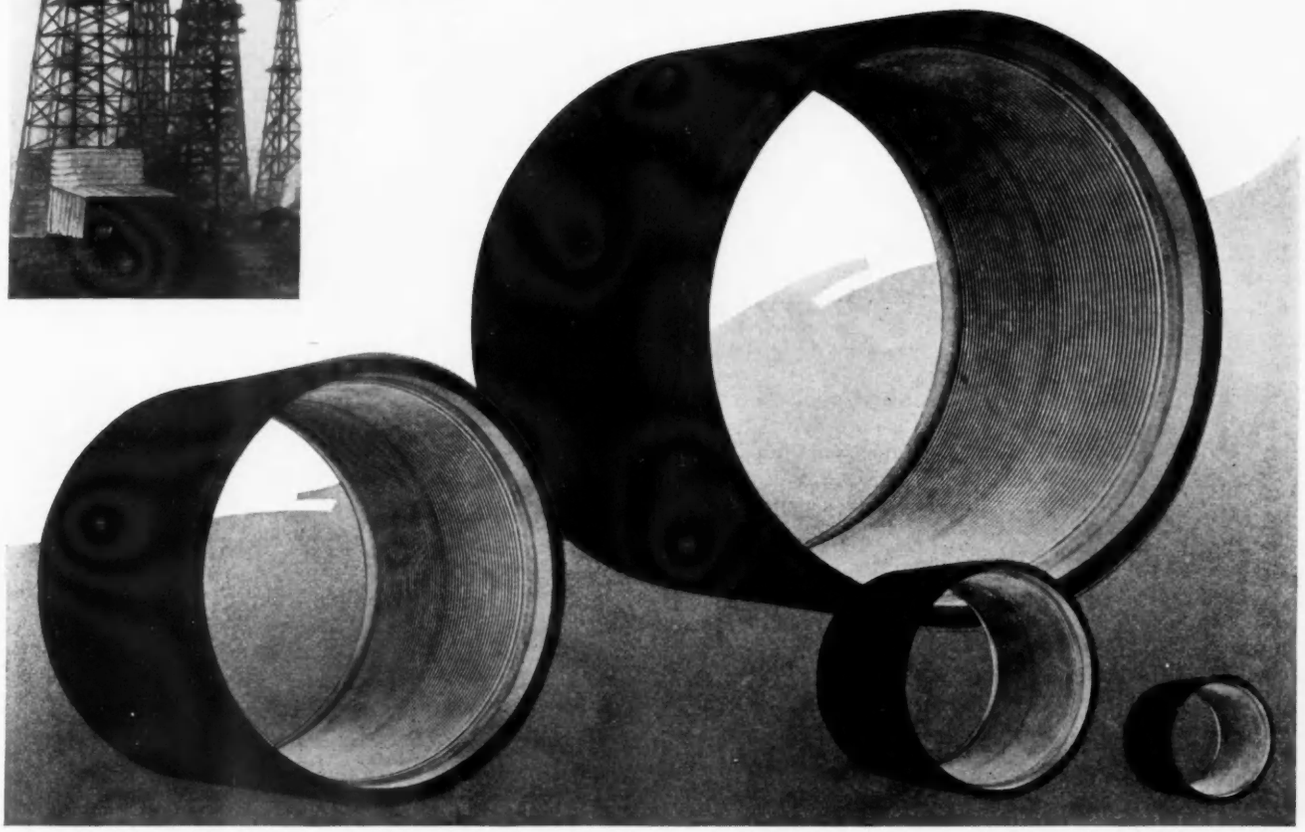
A. *Direct loss of material*

It is shown that precise evaluation of loss of material by corrosion must be based upon the formula:

$$\left[\begin{array}{c}\text{Actual value}\\ \text{of lost}\\ \text{material}\end{array}\right] = \left[\left\{\begin{array}{c}\text{Initial}\\ \text{cost of}\\ \text{material}\end{array}\right\} \times \left\{1 - \frac{\left(\begin{array}{c}\text{Age at}\\ \text{time of}\\ \text{failure}\end{array}\right)}{\left(\begin{array}{c}\text{Life ex-}\\ \text{pectancy in}\\ \text{absence of}\\ \text{corrosion}\end{array}\right)}\right\}\right] - \left[\begin{array}{c}\text{Scrap}\\ \text{recovery}\\ \text{value}\end{array}\right]$$

Methods for determining the numerical values of the various factors in this formula are detailed for the several

Are you using the right Coupling?



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classes of production equipment. Obviously, application of this method requires a tedious process of study of field records, but the usual practice of basing estimates upon inadequate data has been found to lead to entirely erroneous conclusions.

B. *Cost of repairs*

The cost of repairs is an inseparable item in every case of corrosion failure, and should be calculated with the same care as the actual loss of material.

C. *Loss of production*

When a producing well is shut down, a loss of production may result. When the shut-down is occasioned by corrosion failure of any item of well equipment, this loss of production should be charged as a part of the corrosion expense. It is pointed out that such shut-downs do not necessarily result in loss of production, and that a correct evaluation can be reached only through study of well production curves.

D. *Indirect increase in production corrosion*

Probably the most neglected type of corrosion loss is that resulting indirectly from corrosion failure of equipment. These indirect losses are frequently important in fields where corrosion is not an obvious production trouble. Hence, careful study of field conditions is imperative to a proper summation of corrosion losses.

E. *Other sources of corrosion loss*

Corrosion of well equipment also results, in some instances, in water-flooding of producing formations, in an accelerated rate of production decline, and, for extreme cases, in the loss of producing wells before the economic limit of production has been attained.

The criteria laid down in this paper, if properly and intelligently applied, make possible an accurate evaluation of all of the items which enter into corrosion expense.

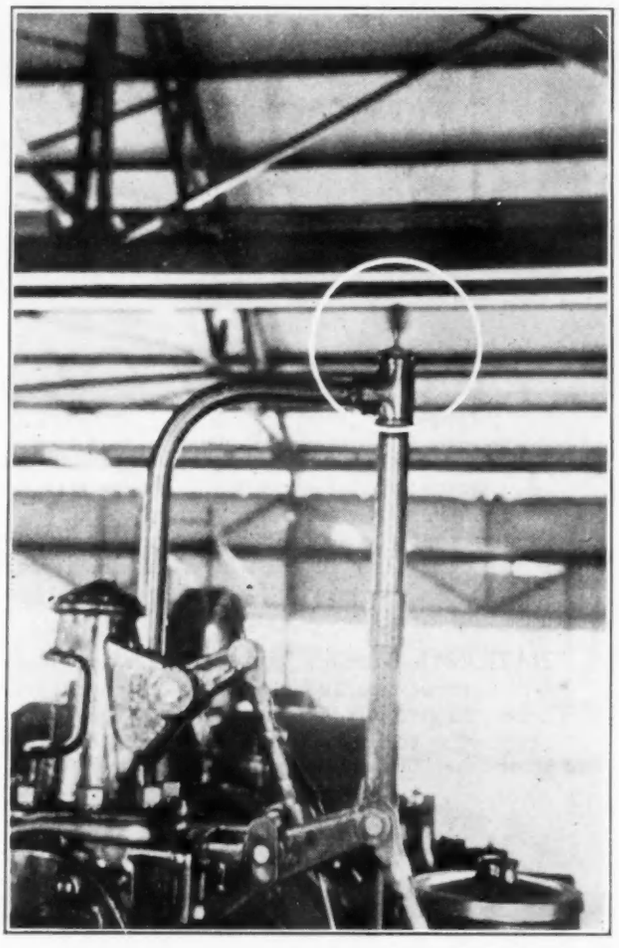
Ingenious Water Circulation Signal Used in Sumatra

MECHANICAL engineers of Bataafsche Petroleum Maatschappij, in Sumatra*, have developed a water circulation signal which greatly simplifies the duty of the attendant and effectively guards gas engines and compressors against the dangers resultant upon stoppage of cooling water.

The idea is simplicity itself, and its installation is not beyond the capacity of any versatile oil field mechanic. It consists essentially of an external target driven by a tiny water turbine which rotates as the water circulates and comes to rest if/when circulation stops, by reason of clogged intake, obstruction in the pipe, or for any reason at all.

The accompanying photograph illustrates the method of installation. The pipe carrying water to the cylinder jacket is brought up over the engine, well above all of its moving parts and other gadgets, so as to be visible from any point in the building. The entire device is contained within and between the tee, collar, and nipple shown in the illustration. The turbine, which fits inside the nipple, can be made of a piece of thin flat iron, of smaller diameter than the inside of the pipe, which may be heated, twisted, and worked into spiral shape, with a pivot at the bottom end and a spindle at the top, so as to receive a rotating impulse from the pressure of the circulating water. This hand-wrought turbine is pivoted in the collar, with a ball bearing in the tee, and with packing above the bearing so that its spindle or shaft may extend outside the tee. The target is circular in shape, but may be of any design and of any diameter, from two to six inches, or more, as required. One side is painted red and the other white, black, or any other bright color, for greater visibility.

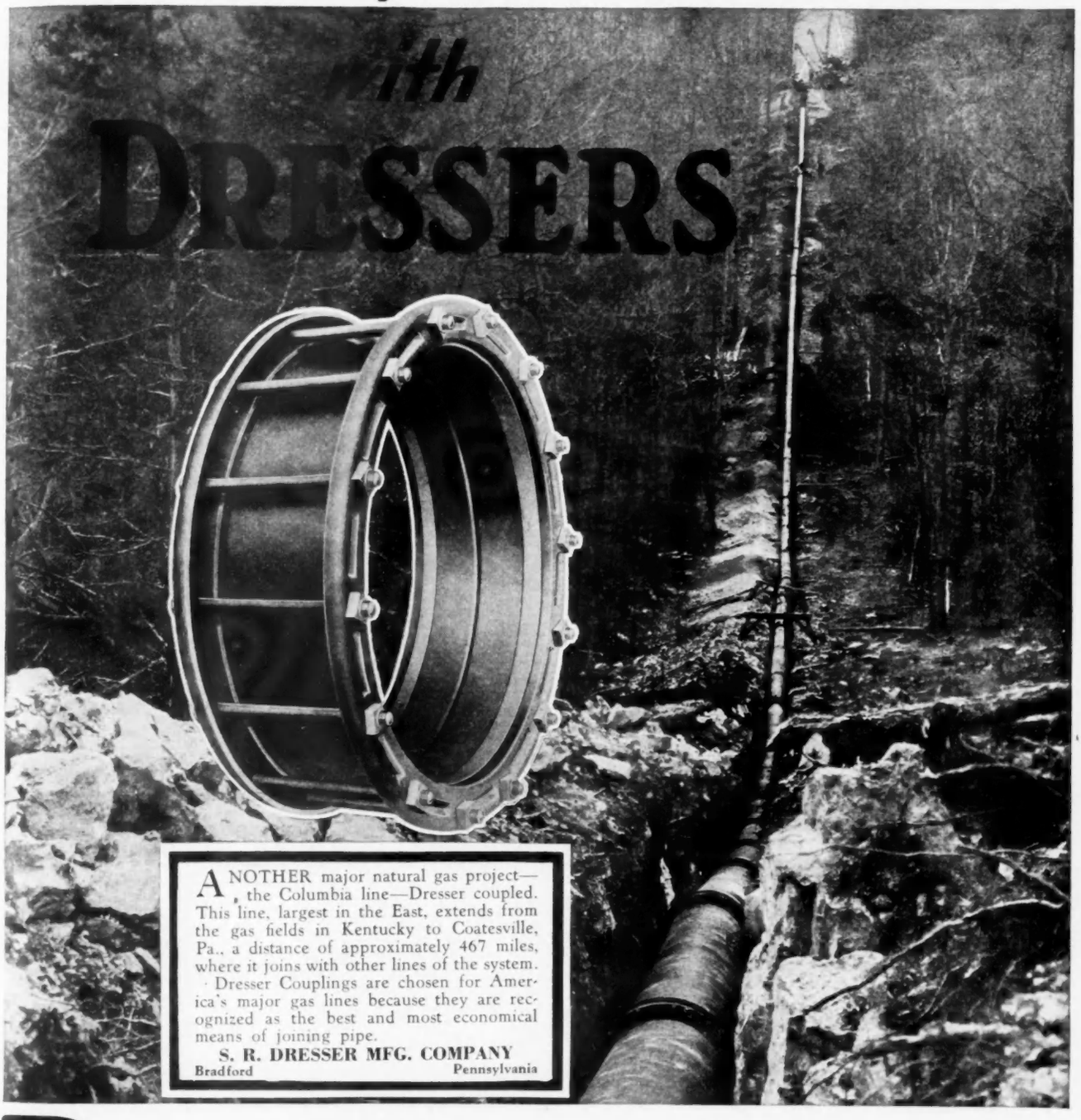
In a plant containing 10 or 20, more or less, units all these targets are placed in the same horizontal and longitudinal line, so that the attendant may sit or stand at either end of the row and watch them at the same time.



Water Circulation Signal Used in Sumatra

*This idea may have been developed elsewhere, and is applicable to any type of internal combustion engine or water-cooled machinery; but The OIL WEEKLY'S foreign editor saw it first in the Bataafsche Petroleum Maatschappij's gasoline plant at Soeban Djerigi, southern Sumatra, Dutch East Indies.

From Kentucky to the Eastern Markets



ANOTHER major natural gas project—, the Columbia line—Dresser coupled. This line, largest in the East, extends from the gas fields in Kentucky to Coatesville, Pa., a distance of approximately 467 miles, where it joins with other lines of the system.

Dresser Couplings are chosen for America's major gas lines because they are recognized as the best and most economical means of joining pipe.

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THE principal features in the construction of our *Vapor-Pressure* Flow and Stock Tanks include: 12-gauge (or heavier) rust-resistant Keystone Copper Steel; ½″ heat-treated bolts; heavy 2″ angle ties and reinforcements, with wide gussets on ties and ladders; efficient combination valves set at 16 ounces pressure and ½ ounce vacuum; and our special aluminum paint which is made with an exceptionally durable vehicle containing water-proof and alkali-proof Inhiburine.

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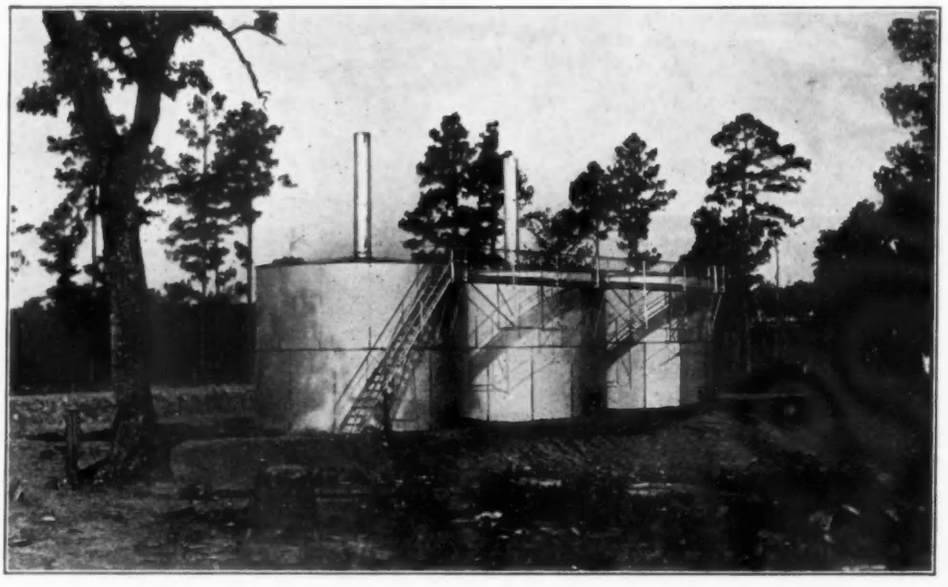

MADE OF KEYSTONE AMERICAN

(At left) Three 1,000-Bbl. Maloneys at Joinerville, in East Texas.

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MALONEY

Markets • Production • Crude Prices

H. J. STRUTH, ***Staff Economist, Houston, Texas***

Control in East Texas Field Sustains Continued Optimism

There was little change in daily average production of the United States last week. American Petroleum Institute figures reported a gain of only 7250 barrels, placing the daily output at 2,464,050 barrels. While this figure included an estimated daily production for East Texas of 411,250 barrels, representing the week ending with Wednesday, reports from that area show that production was actually somewhat below that figure. At the close of last week East Texas production amounted to 368,481 barrels daily, representing the output of 2957 wells. This constituted an average per well of 124.6 barrels; slightly below the limit of 125 barrels per well.

The situation in East Texas continues to reflect state efforts to prevent over-production and offers every reason to believe that uncertainty has been practically abolished. As long as production can be held within a field limit of 400,000 barrels a day, there should be little concern over the rate of development being carried on. At the rate wells are being completed in East Texas, it appears certain that further reductions in allowable output will be made. In fact, on the basis of current developments, the present allowable of 125 barrels per well will probably be revised by December 5 to 100 barrels per well. Bringing in new allowable production at the rate of about 16,000 barrels a day, each week, will boost the field total by that date to about 412,000 barrels a day. This will undoubtedly prompt a necessary reduction in the well allowable. Under such conditions, it is apparent that optimism over the outlook for the balance of this year is justified. The degree of control achieved in East Texas and elsewhere has removed "distress" oil from the market and has practically eliminated under-selling.

Oklahoma's production increased 8900 barrels daily last week, bringing the state total to 543,750 barrels; only slightly below the allowable. Under present conditions this rate of production is excessive, since storage figures reveal a consistent increase each week. It was pointed out in last week's issue of THE OIL WEEKLY that production in Oklahoma has been exceeding actual market requirements to the extent of about 34,000 barrels a day. Continued running of Oklahoma crude to storage in the face of an allowable figure which exceeds actual production is therefore misleading. A study of actual supply and demand facts at present would seem to indicate that Oklahoma is over-producing almost as much as Texas, judging the figures entirely from a market angle. At any rate, the following figures offer an up-to-the-minute measurement of the extent of over-production as it seems to exist in the three major producing states:

Texas	48,000
Oklahoma	41,000
California	20,400
Total	109,400

Increases in production were reported last week by Oklahome, Louisiana, Eastern States, Rocky Mountain States and California. The extent of the increases reported was offset by declines in production of Kansas and Texas. Production exceeded the economic limit to the extent of more than 100,000 barrels a day, which can definitely be charged to Texas, Oklahoma and California. The largest increase reported last week was 11,800 barrels in California, where the state total rose to 507,900 barrels; 20,000 barrels above the allowable. As near as can be determined, Arkansas and Kansas market requirements are being partly supplied from storage.

Drilling permits declined sharply last week to 175, from a total in the preceding week of 289. Texas drilling permits declined from a total of 256 to 127. Drilling activity in East Texas resulted in the completion of 133 wells, of which 130 were listed as oil producers. The initial production of the new producing wells completed in East Texas was rated at a total of 1,071,250 barrels, or at about the same rate which prevailed during the preceding week. The crude market in East Texas continued firm during the past week, with demand for crude showing little decline. The market structure throughout the Mid-Continent area appears to indicate strength that is expected to hold posted prices at present levels through the balance of this year.

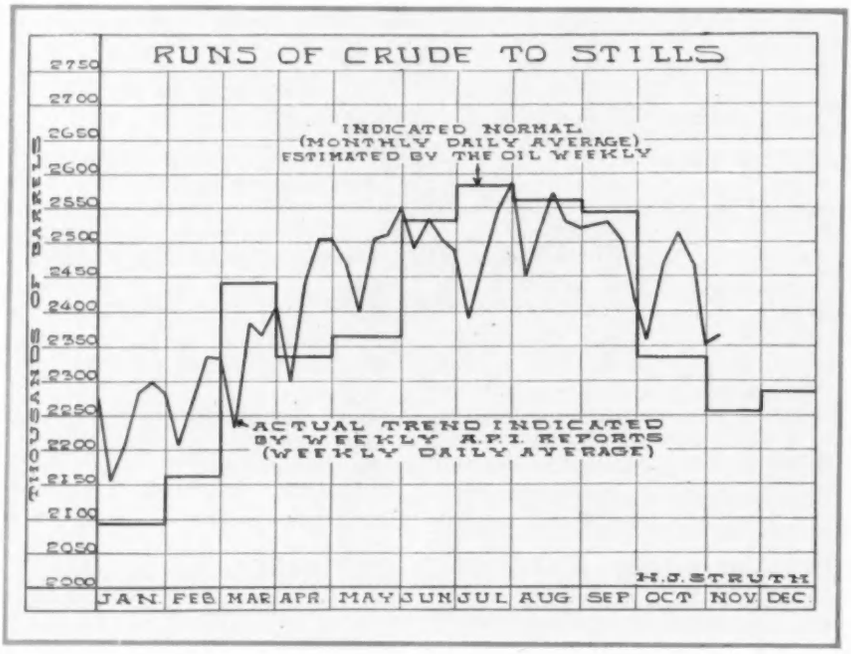
Gasoline Stocks Decline; Still Runs Record Rise

A sudden spurt in the demand for gasoline last week resulted in a withdrawal of that product from storage to the extent of 810,000 barrels. This was somewhat of a surprise, particularly in view of a tendency on the part of refiners to increase runs to stills. Obviously, the degree of gasoline buying imparted the tendency toward increased operation of refinery stills. However, in view of the fact that refiners are familiar with the supply situation and undoubtedly realize that there is need for an immediate reduction in crude throughput, it is alarming to find them influenced by a sudden enlivened interest among gasoline buyers.

Continued ideal weather conditions in many sections of the country have created an unseasonal demand for gasoline that has hastened the depletion of jobbers' stocks. If refiners had taken advantage of this unusual situation and curtailed still runs to the point indicated on the accompanying chart, there would have resulted a sharp withdrawal from gasoline stocks that would have corrected the excesses of the recent past. Instead, runs to stills were increased to the extent of 50,000 barrels. If runs to stills had been maintained at the indicated normal rate of 2,254,000 barrels daily, instead of at the rate of about 2,413,000 barrels, the draft on gasoline stocks last week would have amounted to 1,300,000 barrels—and if runs had been reduced to the previously recommended daily average of 2,175,000 barrels, the reduction in gasoline stocks would have amounted to 1,538,000 barrels. This illustrates the fallacy of running crude to stills at a rate which is unquestionably in excess of indicated requirements.

Gasoline stocks as of November 14 were reported to the American Petroleum Institute at a total of 31,891,000 bar-

MARKET SECTION



rels, against 32,701,000 barrels at the end of the preceding week. Runs to stills for the week averaged, on a Bureau of Mines basis, 2,413,000 barrels daily. From now on, it is definitely certain that the demand for gasoline will reflect the usual seasonal decline, which makes it imperative for refiners to curtail runs to stills. Recent excesses dictate the necessity for an immediate reduction in still runs to a daily average of 2,175,000 barrels. Unless runs are curtailed to the extent indicated, stocks of gasoline and fuel oil will mount to a degree that will completely offset the efforts at curtailment manifested prior to the opening of the fall season.

California Market Situation Better With Crude in Demand

A careful check of reports that high premiums are being paid for large amounts of crude in Los Angeles basin fields shows that small premiums are being offered for a limited amount of oil, but that the bulk of the crude is being marketed at posted prices. Anxiety of some of the smaller refiners to tie up crude over a future period started the payment of premiums. Spot oil has been removed from

Crude Runs to Stills, Gasoline Stocks and Gas and Oil Fuel Oil Stocks

Week Ending November 7, 1931

(Figures in barrels of 42 gallons)

District	Potential Cap (Daily) Total	Potential Cap (Daily) Reporting	Per Cent	Crude Runs to Stills Total	Crude Runs to Stills Daily Average	Crude Runs to Stills Per c't Operated	Gasoline Stocks (see note below)	Gas & Fuel Oil Stocks
East Coast	633,700	633,700	100.0	3,271,000	467,300	73.7	4,116,000	10,378,000
Appalachian	149,600	137,400	91.8	598,000	85,400	62.2	1,319,000	1,668,000
Indiana, Illinois, Kentucky	436,300	431,500	98.9	2,115,000	302,100	70.0	3,183,000	5,647,000
Oklahoma, Kansas, Missouri	485,700	435,200	89.6	1,640,000	234,300	53.8	2,633,000	4,896,000
Texas	838,200	765,400	91.3	3,843,000	549,000	71.7	5,810,000	12,026,000
Louisiana-Arkansas	233,100	230,500	98.9	1,122,000	160,300	69.5	830,000	3,904,000
Rocky Mountain	160,900	143,800	89.4	227,000	32,400	22.5	1,236,000	814,000
California	914,500	888,100	97.1	3,242,000	463,200	52.2	*‡12,944,000	97,717,000
Total week Nov. 7	3,852,000	3,665,600	95.2	16,058,000	2,294,000	62.6	32,071,000	137,050,000
Total week Oct. 31	3,852,000	3,665,600	95.2	16,348,000	2,335,400	63.7	31,445,000	135,707,000
Total Nov. 8, 1930	3,730,100	3,566,400	95.6	15,922,000	2,274,600	63.8	[1]35,309,000	139,020,000
The Texas and Louisiana Gulf Coastal figures shown below are included above in the totals of their respective districts.								
Texas Gulf Coast	532,500	531,500	99.8	3,017,000	431,000	81.1	4,369,000	8,738,000
Louisiana Gulf Coast	147,500	147,500	100.0	787,000	112,400	76.2	719,000	3,059,000

Note: In all the refining districts indicated except California, figures in this column represent gasoline stocks at refineries. In *California, they represent the total inventory of finished gasoline and engine distillate held by reporting companies wherever located within continental United States—(stocks at refineries, water terminals and all sales distributing stations, including products in transit thereto).

[1] Revised in Indiana-Illinois district, due to transfer to "Bulk Terminals" of stocks previously reported as "At Refineries."

‡California Stocks include approximately 580,000 barrels of gasoline and 680,000 barrels of Gas and Fuel Oil held at Tank Farm storage which has not been previously reported.

MARKET SECTION

HOW LAST WEEK'S DAILY AVERAGE PRODUCTION COMPARES WITH NECESSARY AND NORMAL QUOTA LIMIT

State—	Indicated Demand Fourth Quarter 1931	Economic Limit Fourth Quarter 1931	Daily Average Last Week	Daily Excess Last Week	Daily Average Since January 1	Daily Excess Since January 1†
Arkansas	56,000	50,000	37,750	—12,250	43,995	—10,405
California	500,000	487,500*	507,900	+20,400	521,795	+28,295
Kansas	113,000	110,000	102,900	—7,100	106,360	—5,640
Louisiana	75,000	60,000	61,900	+1,900	62,963	—7,537
Oklahoma	525,000	545,000*	543,750	—1,250	468,596	—47,904
Texas	860,000	900,000*	990,450	+90,450	898,245	+139,546
Balance of U. S.	214,000	210,000	219,500	+9,500	208,325	—25,450
Total	2,343,000	2,362,500	2,464,050	+101,650	2,310,279	+70,905

*Allowable.
†Excess based on allowable to date.

the market, making the road of the week-to-week refiner very rocky.

Payment of premiums up to 50 cents has been reported, but the average is much less. Most of the larger operators are under contract to deliver their production at posted prices. The rush to tie up the remaining loose crude resulted in the payment of premiums higher than would have been necessary had more diplomacy been used. Reports of premiums and bonuses spread rapidly and some of the small producers formed exaggerated ideas of the value of a barrel of oil.

If the improvement continues, higher crude prices will be posted. Developments of the past week were not as favorable as during the two preceding weeks. An easing off in the demand for gasoline was noted, while crude oil was more plentiful. A steady improvement is wanted with no spurts to mislead both the purchaser and seller. As in the past, the improvement has not been as basic as current

Cracked Gasoline Production

Week Ending November 7, 1931

(Barrels of 42 gallons)

	Potential Charging Capacity Total	Daily Reporting	%	Production Total	Daily Average
East Coast	261,300	236,300	94.0	649,000	92,700
Appalachian	56,300	54,100	96.1	170,000	24,300
Ind., Ill., Ky.	330,400	315,400	95.5	597,000	85,300
Okla., Kans., Mo.	237,800	219,500	92.3	369,000	52,700
Texas	450,800	436,200	96.8	1,003,000	143,300
Louisiana-Arkansas	112,400	112,400	100.0	268,000	38,300
Rocky Mountain	99,900	98,400	98.5	105,000	15,000
California	190,800	190,800	100.0	284,000	40,600
Total week Nov. 7	1,739,700	1,663,100	95.6	3,445,000	492,200
Total week Oct. 31	1,739,700	1,663,100	95.6	3,517,000	502,400
Total Nov. 8, 1930	1,589,200	1,320,600	83.1	2,469,000	352,700
The Texas and Louisiana Gulf Coastal Figures Shown Below are Included Above in Totals of Their Respective Districts.					
Texas Gulf Coast	352,400	347,400	98.6	799,000	114,100
Louisiana Gulf C.	77,000	77,000	100.0	197,000	28,100

Imports of Petroleum

(Barrels of 42 gallons)

	Total Month Oct.	Total Month Sept.	Week Ended Nov. 7	Week Ended Oct. 31
AT ATLANTIC COAST PORTS—				
Baltimore	1,665,000	812,000	165,000	423,000
Boston	449,000	218,000	.....	200,000
New York	3,124,000	[3]3,159,000	928,000	857,000
Philadelphia	829,000	603,000	186,000	148,000
Others	1,260,000	689,000	258,000	[3]343,000
Total	7,327,000	[5]5,481,000	1,537,000	[1]1,971,000
Daily Average	236,355	182,700	219,571	281,571
AT GULF COAST PORTS—				
Galveston District	189,000	145,000	.....	64,000
New Orleans and Baton Rouge	213,000	250,000	65,000	51,000
Port Arthur and Sabine District	65,000	.....	.....	.....
Tampa	57,000	.....	.....	.....
Total	524,000	395,000	65,000	115,000
Daily Average	16,903	13,166	9,286	16,429
AT ALL UNITED STATES PORTS—				
Total	7,851,000	5,876,000	1,602,000	[2]2,086,000
Daily Average	253,258	195,866	228,857	298,000
Distribution of Total Imports Is As Follows:				
Crude	4,215,000	2,795,000	1,096,000	808,000
Gasoline	1,045,000	[1]1,012,000	91,000	271,000
Gas Oil	63,000	24,000	.....	.....
Fuel Oil	2,528,000	2,045,000	415,000	[1]1,007,000
Total	7,851,000	[5]5,876,000	1,602,000	[2]2,086,000

[1]Revised.

California Oil Receipts

(Barrels of 42 gallons)

	Total Month Oct.	Total Month Sept.	Week Ended Nov. 7	Week Ended Oct. 31
AT ATLANTIC COAST PORTS—				
Baltimore	73,000	128,000	.....	.....
Boston	35,000	110,000	.....	.....
New York	598,000	388,000	285,000	97,000
Philadelphia	518,000	141,000	.....	.....
Others	289,000	221,000	.....	.....
Total	1,513,000	988,000	285,000	97,000
Daily Average	48,806	32,933	40,714	13,857
AT GULF COAST PORTS—				
Total	103,000	[1]207,000	72,000	.....
Daily Average	3,323	6,900	10,286	.....
AT ATLANTIC & GULF COAST PORTS—				
Total	1,616,000	[1]1,195,000	357,000	97,000
Daily Average	52,129	39,833	51,000	13,857
Distribution of Total California Oil Receipts Is As Follows:				
AT ATLANTIC COAST PORTS—				
Gasoline	1,513,000	704,000	285,000	97,000
Fuel Oil	.....	284,000	.....	.....
Total	1,513,000	988,000	285,000	97,000
AT GULF COAST PORTS—				
Gasoline	103,000	[1]177,000	72,000	.....
Kerosene	.....	30,000	.....	.....
Total	103,000	[1]207,000	72,000	.....

[1] Revised.

MARKET SECTION

United States Daily Average Production

1930	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
June	665,550	133,600	668,300	210,500	40,300	56,900	135,750	84,600	598,000	2,593,500	77,806,900
July	594,750	121,600	652,350	209,400	40,550	55,400	137,200	98,350	610,450	2,520,050	78,121,200
August	558,850	115,650	646,400	206,600	41,500	55,100	128,550	106,000	611,250	2,470,900	76,597,600
September	558,900	116,550	606,550	200,750	40,150	53,550	121,400	110,650	604,900	2,413,400	72,402,205
October	542,100	114,850	609,500	194,850	41,500	52,800	121,750	104,000	590,800	2,372,150	73,536,350
November	491,550	111,400	579,350	190,100	44,050	52,000	116,400	101,950	601,200	2,288,000	68,639,150
December	459,300	105,550	533,400	189,300	43,000	51,100	112,200	100,500	587,450	2,181,800	67,636,500
1931											
January	452,000	106,350	511,050	188,850	41,100	50,700	110,300	96,700	535,700	2,092,750	64,874,450
February	473,750	114,450	523,700	185,600	43,950	49,950	109,800	100,100	527,300	2,128,600	59,600,450
March	531,900	110,550	585,000	177,950	40,250	47,550	108,800	95,400	528,100	2,225,500	68,990,850
April	543,650	109,250	723,050	185,850	39,050	47,000	111,500	95,500	527,350	3,382,200	71,465,750
May	561,950	107,400	767,200	185,950	39,200	46,650	111,250	97,500	534,150	2,451,250	75,975,950
June	556,850	103,150	828,250	170,100	36,500	44,900	108,950	97,950	520,300	2,466,950	74,009,750
July	527,950	100,000	912,250	157,850	33,650	41,400	107,600	94,400	517,900	2,493,000	77,282,700
August	306,150	101,900	976,800	153,550	30,400	37,650	109,600	92,900	510,900	2,319,050	71,890,200
September	261,050	104,600	752,250	149,950	29,600	38,000	117,400	92,250	505,550	2,050,650	61,518,950
October	423,600	103,950	865,800	153,500	29,200	37,750	121,600	93,950	503,800	2,333,150	72,327,750
Nov. 7	534,850	106,450	878,000	158,800	29,050	37,750	121,600	94,200	496,100	2,456,800	17,197,600
Nov. 14	543,750	102,900	864,650	158,100	29,600	37,750	124,900	94,600	507,900	2,464,050	17,248,350
Increase	8,900	.....	.....	.....	550	.....	3,300	400	11,800	7,250	50,750
Decrease	.....	3,550	13,350	700	.....	.....	.....	.....	.....	.....	.....

Last Week's Daily Average Production by Districts

TEXAS	Nov. 14	Nov. 7
Panhandle	60,500	67,450
North Texas	57,650	57,450
West Central Texas	26,400	26,600
West Texas	196,450	194,750
East Central Texas	56,450	55,900
East Texas	411,250	419,450
Southwest Texas	55,950	56,400
Texas Gulf Coast	125,800	126,350
Total Texas	990,450	1,004,350
OKLAHOMA	543,750	534,850
CALIFORNIA	507,900	496,100
KANSAS	102,900	106,450

LOUISIANA	Nov. 14	Nov 7
North Louisiana	29,600	29,050
Louisiana Gulf Coast	32,300	32,450
TOTAL LOUISIANA	61,900	61,500
ARKANSAS	37,750	37,750
MOUNTAIN STATES		
Wyoming	38,400	38,450
Montana	7,850	7,500
Colorado	3,900	4,300
New Mexico	44,350	43,950
TOTAL MOUNTAIN STATES	94,600	94,200
EASTERN STATES	124,900	121,600
TOTAL UNITED STATES	2,464,050	2,456,800

Summarized Review of Field Results

State—	Completions This week	Completions Last week	Oil Wells This week	Oil Wells Last week	Gas Wells This week	Gas Wells Last week	Failures This week	Failures Last week	Initial Prod. This week	Initial Prod. Last week
Arkansas	0	1	0	1	0	0	0	0	0	50
California	4	5	4	3	0	0	0	2	31,050	2,225
Illinois	0	0	0	0	0	0	0	0	0	0
Indiana	0	0	0	0	0	0	0	0	0	0
Kansas	6	8	2	5	1	1	3	2	610	4,415
Kentucky	7	7	5	5	2	2	0	0	250	250
Louisiana	0	3	0	0	0	2	0	1	0	0
Michigan	5	5	0	0	1	1	4	4	0	0
Mississippi	1	0	0	0	1	0	0	0	0	0
New Mexico	2	0	2	0	0	0	0	0	9,385	0
New York	1	0	0	0	1	0	0	0	0	0
Ohio	32	32	7	6	20	21	5	5	141	81
Oklahoma	15	9	6	6	4	1	5	2	6,445	16,125
Pennsylvania	2	0	0	0	1	0	1	0	0	0
Texas	160	179	143	148	4	6	13	25	1,082,890	1,074,635
West Virginia	3	0	0	0	3	0	0	0	0	0
Totals	238	249	169	174	38	34	31	41	1,130,771	1,097,781
Increase	..	..	..	..	4	..	..	..	32,990	.....
Decrease	11	..	5	..	..	10	..	..	.....	.....

Comparison of Permits Granted for New Wells

State—	For Week Ending Nov. 14	Previous Week	This Week 1930	Total This Month	This Month 1930	Total this Year	Total This Date Last Year	1930 Year Total
Arkansas	1	2	0	3	9	32	97	108
California	4	8	14	12	82	323	826	922
Louisiana	9	4	11	13	55	286	880	948
Kansas	14	4	15	18	59	404	886	944
Oklahoma	20	15	49	35	160	739	2,651	2,830
Texas	127	256	133	383	412	5,971	6,582	7,052
Total	175	289	222	464	777	7,755	11,922	12,804

MARKET SECTION

reports indicated, but conditions are decidedly better than during the late summer months.

State production has increased slightly, but will not go much higher. Kettleman Hills has increased its potential, but the 60,000-barrel allowable will stand. This field has most of the light-shut-in production of the state and could send out a flood of oil on short notice. The more settled fields do not offer a threat. Ventura Avenue, Long Beach and Santa Fe Springs could produce more oil, but not enough more to cause a panic.

Oklahoma Crude Storage Continues to Increase

Production and storage figures for Oklahoma and Kansas for the week ending November 14 reveal the reason for the few pleas that have been made for a further decrease in field output. Although the average daily output for each state was well under the totals set September 11, the amount of crude oil run to storage increased substantially.

Oklahoma production was at the rate of 543,160 barrels daily, against an allowable of 546,000; Kansas fields produced 102,530 barrels daily, against a market demand estimated at 110,000. Oil run to storage in the two states averaged 87,000 barrels daily. This is an increase in oil to storage of 34,000 barrels daily during the week previous.

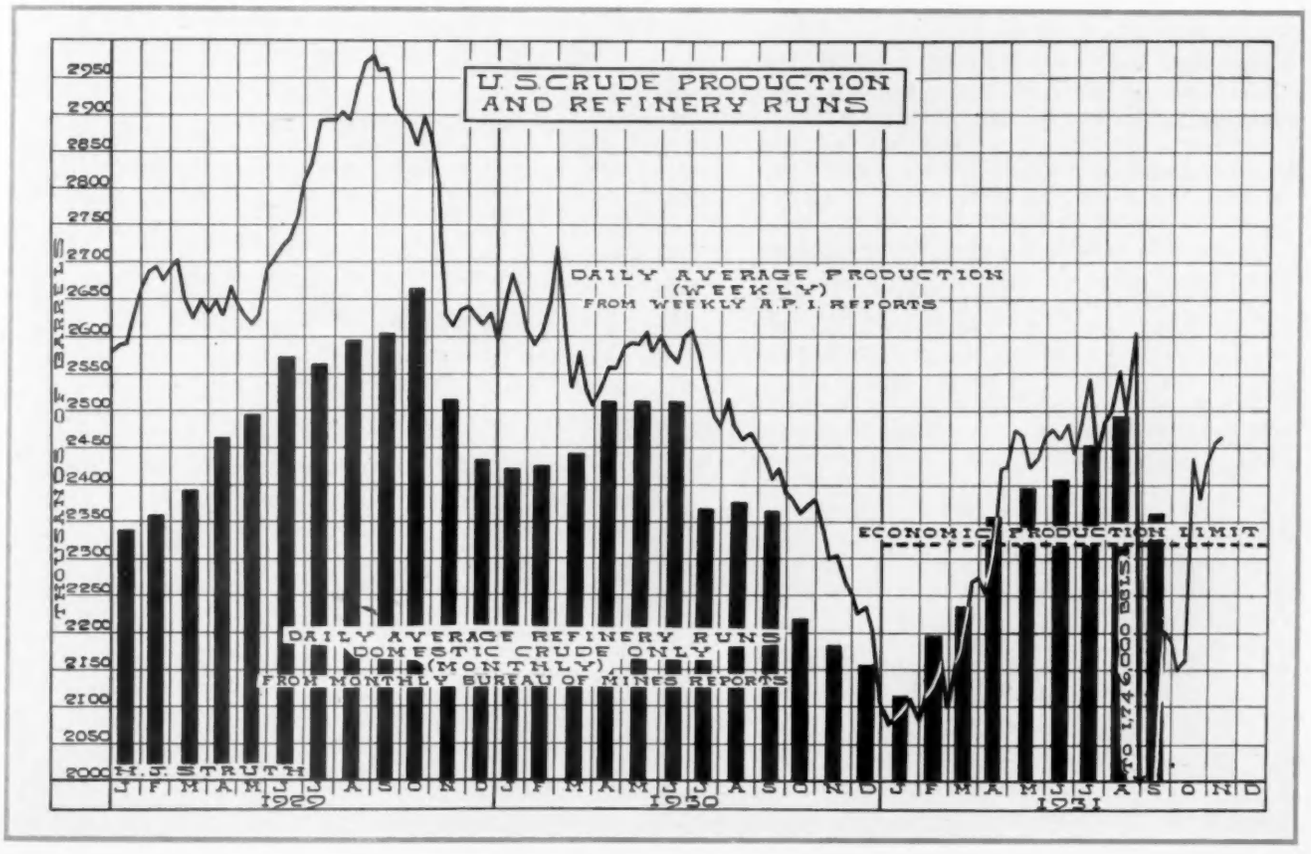
Truman Hill, public service commissioner of Kansas who was chairman of the Oklahoma City meeting of September 11, has given out a statement to the effect that production throughout the Mid-Continent should be reduced another 10 per cent. Shortly after his election as president of the American Petroleum Institute, Amos L. Beaty stated that he believed output should be lowered by that much.

In the Oklahoma production total, Oklahoma City contributed only 169,140 barrels daily although the allowable there is 180,000 barrels. The Seminole area, however, reached 170,000 barrels daily an advance due to the production that comes with the taking of potential output in the fields. Seminole production should drop back with the potentials established. Most of the drop in Kansas was accounted for in the Ritz-Decker-Garret area, whose average output was 14,560 barrels against 17,110 the week previous.

The net gain in oil to storage for the two states is not threatening in its present status, since both Oklahoma and Kansas gave up substantial amounts of stored oil during the period when the Oklahoma City field was under martial law restriction. But the fact that the oil to storage is gaining while total production is not up to the estimated market demand is an indication that the market demand was set too high when the estimates were made in September.

Even the gasoline market over the Group 3 area is feeling the effect of a slackening demand. Prices had not given ground early this week but some refiners were in need of moving finished gasoline. They were seeking buyers instead of awaiting buyers as had been the case over a long period.

This condition among refiners indicates that the demand for crude oil will show a further drop, leaving still more crude oil to go into storage. While a few buyers undoubtedly would welcome opportunity to take oil at present prices for holding, this condition is not general and the feeling is that additions to storage of as much as 100,000 barrels daily in Oklahoma and Kansas will within a short time prove a drag on the price structure.


U.S. CRUDE PRODUCTION AND REFINERY RUNS
DAILY AVERAGE PRODUCTION (WEEKLY) FROM WEEKLY A.P.I. REPORTS
ECONOMIC PRODUCTION LIMIT
DAILY AVERAGE REFINERY RUNS DOMESTIC CRUDE ONLY (MONTHLY) FROM MONTHLY BUREAU OF MINES REPORTS
THOUSANDS OF BARRELS
H.J. STRUTH
1929
1930
1931

MARKET SECTION

Oklahoma City Production Falls Below Allowable

Oklahoma City.—Despite the fact that the taking of potential gauges has been in progress since November 5, Oklahoma City production fell approximately 11,000 barrels daily below the allowable when it averaged only 169,140 barrels during the week ending Saturday, November 14. At the end of the week it was reported that purchasers were keeping working storage cleaned up and several were asking for more crude. At that date 658 potentials had been taken since November 5. To November 10, 384 wells showed a potential of 6,285,300 barrels. Many of these are the largest wells in the pool and practically no gauges had been taken on Arbuckle limestone wells which total about 100 in number and whose potential will materially lower the per well average.

Gauges on 307 wells last April totaled 4,909,000 barrels. Present potential on the same wells is 4,287,702 barrels, or a decline of approximately 12.7 per cent. This represents a monthly decline of less than two per cent which is not high considering the fact that production is in the flush stage and wells from both the Wilcox and Lower Simpson sands are included. Decline in the Arbuckle limestone probably will run considerably higher.

Reports issued Saturday, November 14, from the umpire's office show a gross under-production of 4,393,068 barrels as of November 1, and a gross over-production of 1,594,656 barrels as of the same date, making a net under production of 2,798,412 barrels. Production for October was 4,609,756 barrels, most of which was produced during the last 22 days in the month after the repoening on October 10. Pipe line runs for the same period were 4,438,527 barrels.

Seminole, Oklahoma.—Preliminary figures indicate that the Seminole district will make or exceed its estimated potential, some of the pools going below and others correspondingly above potentials. Due to necessary revisions in production reports from some of the pools, figures had been made available on only the Allen and Sasakwa pools although the 10-day gauge had been completed in nine pools as of Sunday morning, November 15.

All Seminole gauging has been witnessed by representatives of producers in the Oklahoma City pool. Complete reports for Allen show a total production of 188,252 barrels for the 10 days, or a daily average of 18,825 barrels compared with an estimated potential of 18,320 barrels. Sasakwa produced 26,950 barrels during the 10 days for an average of 2695 barrels compared with an estimated potential of 3283 barrels. Partial gauges for other pools were as follows:

Pool—	Daily average	Number of days	Estimated potential
Old Earlsboro	24,300	9	25,307
Earlsboro Townsite	3,300	8	4,508
Seminole City	24,300	8	23,060
East Seminole	2,600	8	2,424
St. Louis	35,000	8	32,590
Asher-Wanette	8,500	5	29,396
Konawa	13,000	6	22,636
Total	111,000		139,921

This is the first time that West Asher-Wanette and Konawa have been given 10-day gauges, the potentials having been based on short flowing periods and estimated on a decline curve of three per cent. It was expected that they would not make their estimated potentials but the poor showing came as a surprise. Leaving out these pools the partial gauges show that estimated potential has been exceeded by about 2000 barrels. West Asher-Wanette and Konawa ordinarily are not included in the Seminole district.

Wichita Falls, Texas.—American Refining Properties, Inc., has resumed purchasing crude from its connections in the Walters district, in Southern Oklahoma, and is delivering same via Duncan-Wichita Falls Pipe Line Company's system, a subsidiary to Taxman Refining Company and other Wichita Falls plant owners. The former concern suspended crude purchases in Oklahoma and North Texas late in September after having previously shut down its refinery at Wichita Falls.

Chicago.—E. B. Reeser, Barnsdall Oil Corporation, Tulsa, retiring president of the American Petroleum Institute, stated following the annual meeting of the A. P. I. here last week that he would depart for California where it is expected he will continue negotiations with the California Oil Producer's Sales Agency which has been soliciting Mr. Reeser to accept the presidency.

A special committee, composed of Ralph B. Lloyd, Rush M. Blodget and Frederick D. Anderson, president, manager and assistant secretary of the agency, tendered to Mr. Reeser an offer to become the full time president during the Chicago meeting but definite action was postponed until Mr. Reeser's visit to California.

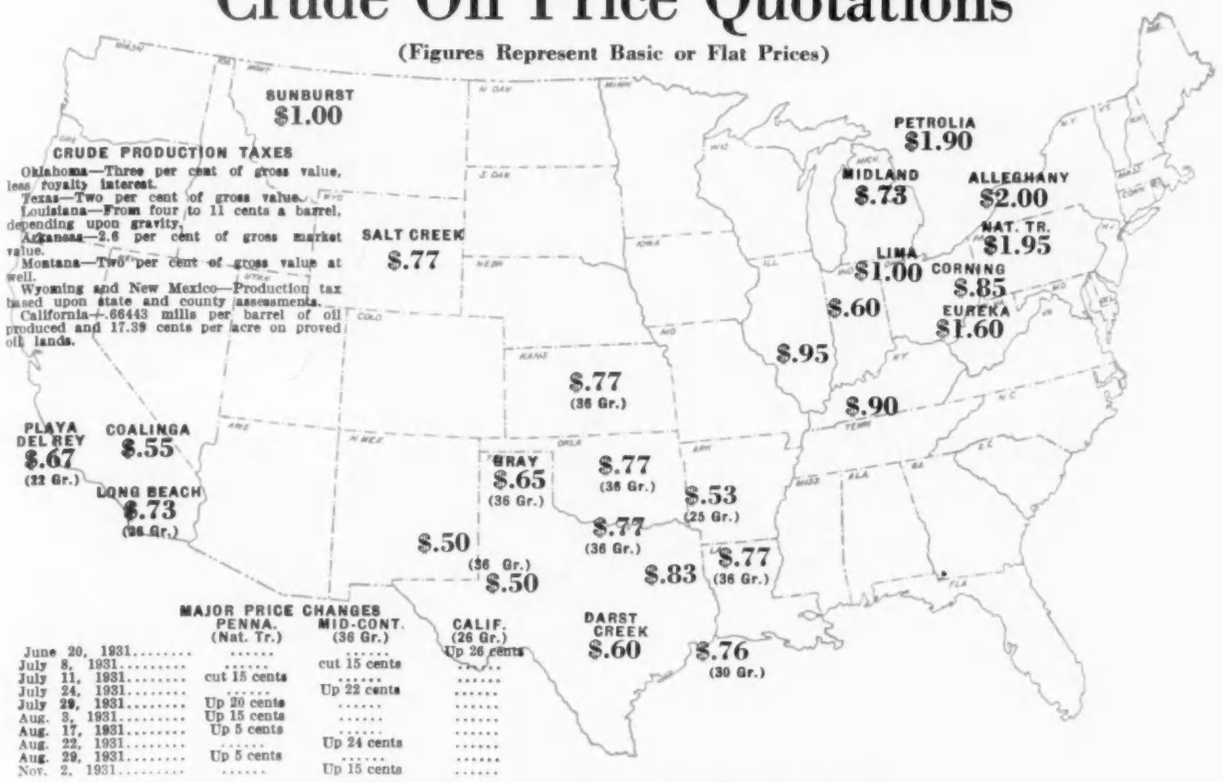
Summary of Field Operations as of Nov. 1

State	Active Tests*	Rigs	Locations
Alabama (Wildcat and Proven)	4	0	1
Arkansas (Wildcat and Proven)	37	4	2
California Proven Fields	148	13	10
California Wildcats	135	12	5
Kansas Proven Fields	69	11	9
Kansas Wildcats	20	1	0
North Louisiana (Proven & Wildcat)	53	5	10
South Louisiana Proven	18	2	19
South Louisiana Wildcat	11	3	4
Mississippi (Proven & Wildcat)	26	2	8
Oklahoma Proven Fields	197	26	15
Oklahoma Wildcats	59	5	1
Tennessee (Proven & Wildcat)	2	0	0
Texas—			
Gulf Coast Proven Fields	38	2	10
Gulf Coast Wildcats	54	12	11
South Texas Proven Fields	24	6	9
South Texas Wildcats	76	10	5
North and Central West Texas Proven Fields	102	4	22
North and Central West Texas Wildcats	30	1	12
Panhandle Proven Fields	34	8	3
Panhandle Wildcats	9	3	3
West Texas Proven Fields	41	2	4
West Texas Wildcats	33	5	3
Central East Texas Proven Fields	405	236	124
Central East Texas Wildcats	53	12	2
East Texas Wildcat and Proven	24	3	2
Total	1702	388	294
Texas Total	923	304	210

*Includes tests shut down.

Crude Oil Price Quotations

(Figures Represent Basic or Flat Prices)



MAJOR PRICE CHANGES

	PENNA. (Nat. Tr.)	MID-CONT. (36 Gr.)	CALIF. (26 Gr.)
June 20, 1931	.....	.....	Up 26 cents
July 8, 1931	.....	cut 15 cents	.....
July 11, 1931	cut 15 cents	.....	.....
July 24, 1931	.....	Up 22 cents	.....
July 29, 1931	Up 20 cents	.....	.....
Aug. 3, 1931	Up 15 cents	.....	.....
Aug. 17, 1931	Up 5 cents	.....	.....
Aug. 22, 1931	.....	Up 24 cents	.....
Aug. 29, 1931	Up 5 cents	.....	.....
Nov. 2, 1931	.....	Up 15 cents	.....

Official Postings and Differentials

(Revised to November 17, 1931)

California: (Effective June 19, 1931.

Signal Hill, Seal Beach and Alamitos Heights: 14 to 22.9 gravity 65 cents; 23 gravity, 67 cents with differential of two cents for each degree upward. Top price for Signal Hill, 30 gravity, 81 cents; top price Seal Beach and Alamitos Heights, 27 gravity, 75 cents.

Huntington Beach: 14 to 21 gravity, 65 cents; 22 gravity, 66 cents with differential of two cents for each degree upward. Top price, 27 gravity, 76 cents.

Inglewood: 14 to 19.9 gravity 65 cents; 20 gravity 66 cents with differential of two cents for each degree upward. Top price, 25 gravity 76 cents.

Playa Del Rey: 19 to 20.9 gravity 65 cents with differential of one cent for each degree upward. Top price, 25 gravity, 70 cents.

Olinda and Brea Canyon: 14 to 19.9 gravity 65 cents; 20 gravity 66 cents; 21 gravity 67 cents; 22 gravity 68 cents with differential of two cents for each degree upward. Top price, 28 gravity, 80 cents.

Coyote Hills: 14 to 22.9 gravity 65 cents; 20 gravity 66 cents; 21 gravity 67 cents with differential of two cents for each degree upward. Top price, 28 gravity, 79 cents.

Santa Fe Springs: 24 to 26.9 gravity 65 cents; 27 gravity 68 cents; 28 gravity 71 cents; 29 gravity 73 cents; 30 gravity 75 cents; 31 gravity 78 cents; 32 gravity 80 cents; 33 gravity 83 cents; 34 gravity 85 cents; 35 gravity and above 87 cents.

Whittier, La Habra and Montebello: 65 cents a barrel.

Torrance: 14 to 21.9 gravity 65 cents with differential of one cent for each degree to 25 gravity and two-cent differential for 25 gravity. Top price, 25 gravity, 70 cents.

Richfield: 14 to 20.9 gravity 65 cents; 21 gravity 66 cents with differential of two cents for each degree upward. Top price, 25 gravity, 74 cents.

Elwood: 33 gravity 79 cents; 34 gravity 81 cents with differential of three cents for each degree upward. Top price, 36 gravity, 87 cents.

Newhall, McKittrick and Kern River: 55 cents a barrel.

Midway-Sunset, Elk Hills and Buena Vista Hills: 14 to 21.9 gravity 55 cents; 22 gravity 56 cents; 23 gravity 58 cents; 24 gravity 61 cents; 25 gravity 64 cents; 26 gravity 66 cents; 27 gravity 68 cents; 28 gravity 71 cents; 29 gravity 74 cents; 30 gravity 76 cents.

Los Hills: 14 to 20.9 gravity 55 cents; 21 gravity 57 cents; 22 gravity 59 cents; 23 gravity 60 cents; 24 gravity 62 cents; 25 gravity 64 cents; 26 gravity 66 cents; 27 gravity 67 cents; 28 gravity 69 cents; 29 gravity 71 cents; 30 gravity 72 cents.

Coalinga: 14 to 24.9 gravity 55 cents; 25 gravity 57 cents.

Wheeler Ridge: 55 cents a barrel.

Athens, Dominguez and Rosecrans: 24 to 24.9 gravity 69 cents with differential of two cents for each degree upward. Top price, 34 gravity, 89 cents a barrel.

Oklahoma, Kansas, North Texas (Effective November 2, 1931). Flat Prices.

Oklahoma: Cushing, Yale, Oklahoma City, Morrison, Wewoka and Seminole: 83 cents a barrel; **Cement, Duncan, Walters:** 75 cents a barrel; **Healdton:** 52 cents a barrel; **Hewitt and Graham:** 67 cents a barrel.

North and Central Texas: Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden: 83 cents; **Mexia, Wortham, Corsicana Light, Panola County and Lytton Springs:** 79 cents; **East Texas:** 83 cents. **West Texas:** 50 cents; **Panhandle (Gray County):** 73 cents; **Carson and Hutchinson Counties:** 66 cents. **Mirando crude:** 75 cents; **Darst Creek:** 60 cents; **Corsicana Heavy and Luling:** 49 cents.

Gravity Scale Prices: Below 29 gravity: 61 cents, with differential of 2 cents for each degree to 40 gravity and above which is posted at 85 cents.

Texas Panhandle: (Effective November 2, 1931)

Gray County: Below 35 gravity: 61 cents, with differential of 2 cents for each degree to 40 gravity and above which is posted at 73 cents.

Carson and Hutchinson Counties: Below 35 gravity: 56 cents with differential of 2 cents for each degree to 40 gravity and above which is posted at 68 cents.

West Texas: (Effective November 2, 1931).

Crane-Upton, Crockett, Ector, Howard-Glasscock, Pecos and Winkler Counties, Texas, and Lea County, New Mexico: 50 cents a barrel.

Southwest Texas: (Effective November 2, 1931)

Refugio: Heavy: 75 cents.

Refugio, Light: (Same as Gulf Coast—see below.)

Gulf Coast: (Effective November 2, 1931)

Goose Creek, Hull, Liberty, Orange, Pierce Junction, Mykawa, Moss Bluff, Raccoon Bend, Barbers Hill, Sour Lake, Spindletop, Sugarland, West Columbia, Humble and Refugio Light: Below 25 gravity: 70 cents, with differential of 1 cent for each degree to 40 and above which is posted at 86 cents.

Mirando: 75 cents; **Salt Flat:** 60 cents; **Darst Creek:** 60 cents; **Pettus:** 85 cents; **Markham:** 67 cents.

East Texas (Effective November 2, 1931)

Flat Price 83 cents.

North Louisiana and Arkansas: (Effective Nov. 4, 1931).

Caddo, Homer, Haynesville, Bull Bayou, Sabine, Cricton, De-Soto, El Dorado, Cotton Valley, Sarepta, Cartersville: Below 25 gravity 53 cents with differential of 2 cents for each degree beginning with 25 gravity and ending with 40 and above. Top price 85 cents a barrel.

Smackover: 55 cents.

Rocky Mountain States: (Effective Nov. 3, 1931).

Salt Creek: Below 29 gravity 61 cents; 38 gravity and above 71 cents a barrel.

Elk Basin and Grass Creek: $1.05; **Big Muddy:** 83 cents; **Lance Creek** $1.20; **Rock Creek:** 85 cents; **Sunburst:** $1.00; **Osage:** 98 cents; **Cat Creek:** 65 cents; **Pondera:** 70 cents; **Hogback, New Mexico:** 72 cents.

Eastern States: (Effective November 3, 1931)

Lima: $1.00; **Indiana:** 60 cents; **Illinois:** 95 cents; **Princeton:** 95 cents; **Wooster:** $1.15; **Western Kentucky:** 90 cents.

Pennsylvania: (Effective November 1, 1931)

Bradford District: $2.00; **National Transit Oil:** $1.95; **Southwest Pennsylvania Pipe Line oil:** $1.70; **Eureka Pipe Line Oil:** $1.60; **Buckeye Pipe Line Oil:** $1.50; **Corning crude:** 80 cents.

Michigan: (Effective Aug. 22, 1931). **Midland: 73 cents a barrel. Muskegon:** Same posting as Mid-Continent; **44 cents to 70** cents a barrel.

Canada: (Effective Nov. 3, 1931).

Petrolia: $1.90; **Oil Springs:** $1.97.

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BETTER BE SAFE THAN SORRY

Paper presented before the San Antonio Geological Society, San Antonio, Texas

Economic Influence of Oil Imports and Exports

By H. J. STRUTH
Staff Economist

OVER-SUPPLY, whether it results from over-production or from over-importation, is an economic factor that presents an all-important problem to the petroleum industry. While economic law can usually be relied upon to correct the inequalities resulting from protracted periods of deviation from normal, the petroleum industry has found it expedient to apply measures of control that would eliminate radical departures from normal and shorten the swing of the economic pendulum. Despite the application of such control measures, the economic pendulum was not prevented from making its usual full swing—its arc having taken the usual financial toll that marks the completion of each economic cycle. For some time the pendulum has been on its return movement; the statistical position of the industry has reflected improvement. Nevertheless, concern is felt over continued uncertainties which prevail in the supply situation. Some say that prosperity depends upon stopping the flow of foreign oil into the United States; others say that the chief danger of over-supply arises within our own domain, mainly because of premature development of flush fields. Analysis of both sides of this question of over-supply reveals some facts that have an important bearing upon our domestic and foreign supply situation.

A topic that appears to be uppermost in the minds of oil men today is our foreign oil supply. Imports are said to be the chief deterrent to a balanced oil supply situation in the United States, implying the necessity for a tariff wall that will successfully turn aside large volumes of unneeded and unwanted oil. Obviously, with every indication at hand to show that the United States is plentifully supplied with petroleum, there should be no incentive for inviting an influx of foreign petroleum or its products. Particularly is this true where such foreign oil enters into competition with American oil on a price basis. However, from a purely economic viewpoint, it is necessary to consider the picture as a whole. If imports constitute a burden upon the oil supply situation, then it is up to the industry in the United States to bring about a corrective agency that will lighten or completely remove the burden. At the same time, if pro-

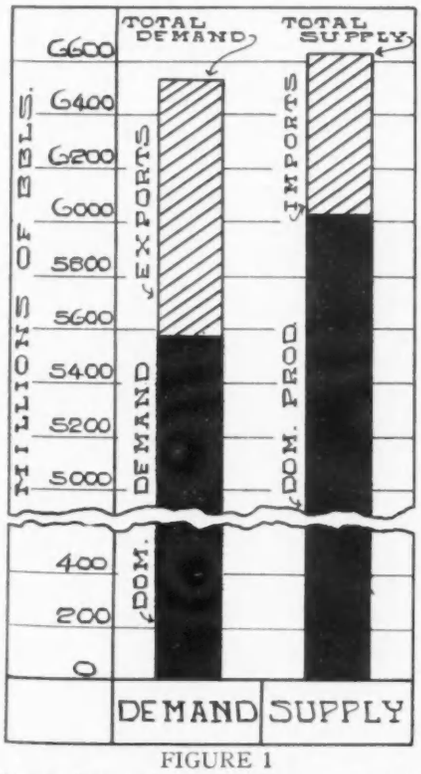


FIGURE 1
Domestic and Foreign supply and demand, cumulative—January, 1925—August, 1931

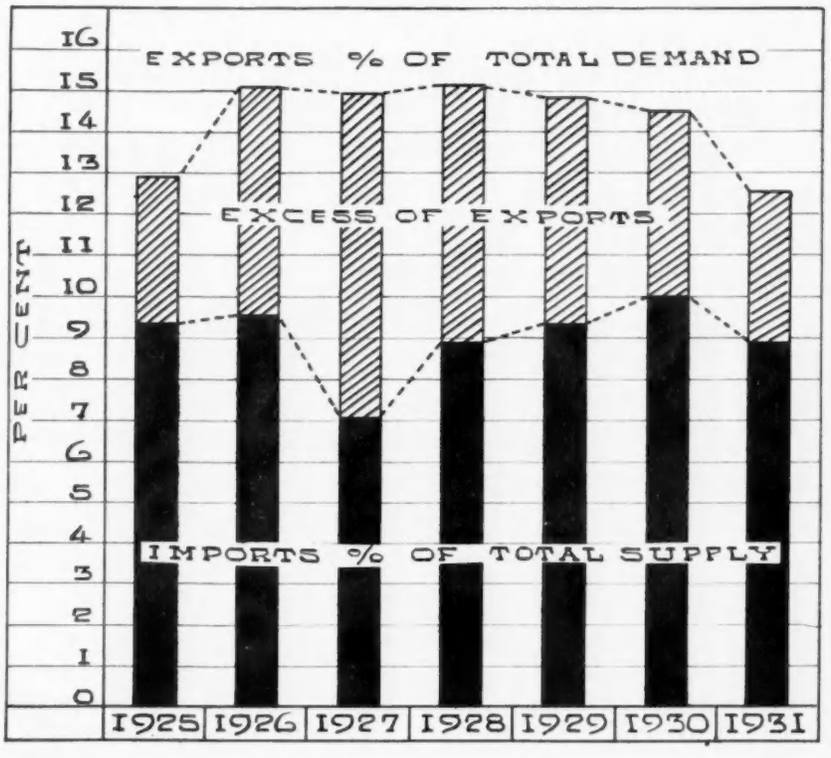


FIGURE 2
Status of imports and exports from supply and demand angle

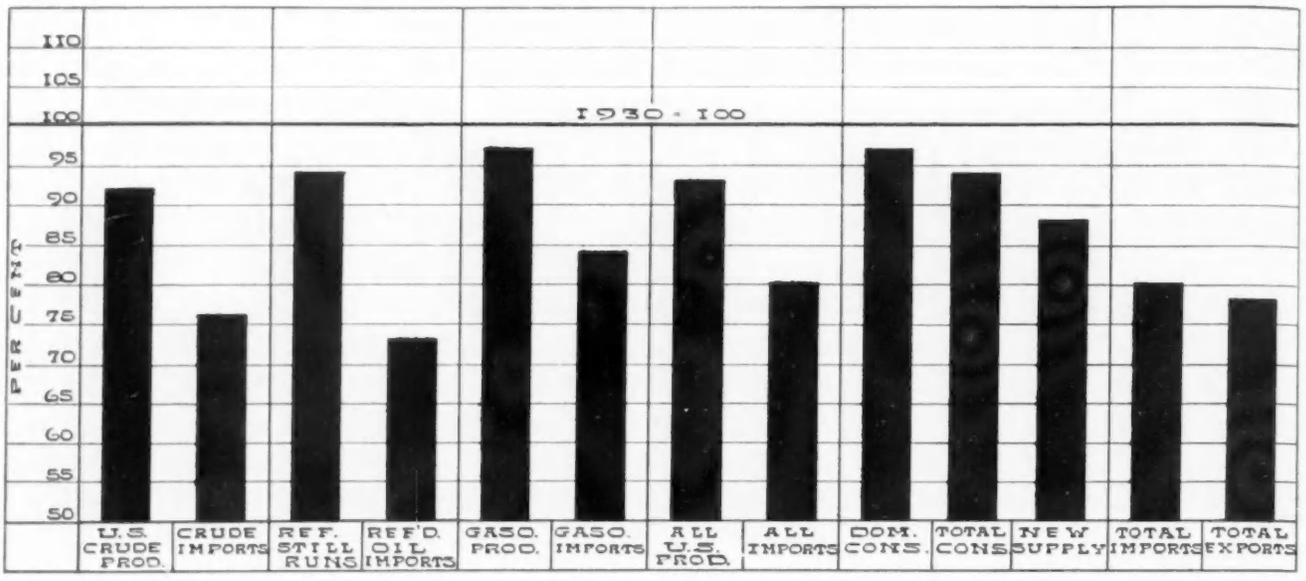


FIGURE 3

Domestic and foreign supply and demand factors—first eight months of 1931 *expressed in per cent of same period of last year*

duction facilities within the United States are contributing factor to the burden of over-supply, compensating measures of control must be applied.

Not One-Sided

Analysis of the facts at hand shows that the question of over-supply is far from a one-sided one. Over a period of recent years, it is apparent that over-supply has been contributed not only by imports but also by domestic overproduction. The extent to which imports have contributed to over-supply is a controversial topic; one that lends itself readily to fit either side of the picture. If we look at the picture as a whole, we find that the cumulative total supply of all oil from January, 1925, to August, 1931, amounted to 6,628,921,000 barrels. During that period, total consumption of all oil amounted to 6,519,918,000 barrels, or 109,003,000 barrels less than production and imports. During that period the industry in the United States imported 594,885,000 barrels of foreign oil. If those imports had been eliminated during this period, all other factors being equal, there would have been a shortage of supply under demand of 485,882,000 barrels. However, this picture carrys the assumption that we could have maintained our exports during that period, which amounted to 948,000,000 barrels. Whether or not the industry could have maintained exports at the same rate recorded during this period is of no immediate consequence to a majority of oil men in the United States today, since, after all, only four major companies, namely Standard Oil Company of New Jersey, Standard Oil Company (Indiana), Gulf Oil Corporation and Shell Petroleum Corporation constitute the bulwark of the industry's foreign trade—both incoming and outgoing. The main point to be considered in the interests of economic welfare is stabilization of supply and demand.

It is difficult to predict just what would happen to our foreign trade if an embargo or import duty were placed into effect. It is logical to conclude, however, that the volume of exports would not be maintained at former rates. Just how much of our foreign trade would be lost as a result of a tariff on imports and what effect such a decline in outgo would have upon our domestic supply is open to conjecture. Suppose, though, that we eliminate imports and exports entirely from the picture of supply and demand. Let us assume that there were no imports and no exports during the period from January, 1925, to August, 1931, inclusive. It was shown in the foregoing that an all-inclusive picture revealed an excess supply of 109,003,000 barrels. During that period, production of all oils in the United States amounted to 6,034,036,000 barrels; domestic consumption aggregated 5,572,000,000 barrels. This indicates that there would have resulted a surplus supply of 462,036,000 barrels, or about 353,000,000 barrels more than actually resulted by the inclusion of imports and exports. Both sides of this interesting picture are graphically portrayed in Figure 1.

Table 1 shows the actual status of United States oil production, as compared with actual total consumption during each year beginning with 1925. It also shows the effect of imports upon the supply situation without considering the effect the elimination of imports might have had upon the export market.

TABLE 1

(Figures represent thousands of barrels)

Year	U. S. Production	(1) Total Consumption	Shortage	Imports	Surplus
1925	763,743	811,847	48,104	78,200	30,096
1926	766,504	872,908	106,404	81,322	—25,082
1927	942,348	943,981	1,633	71,736	70,103
1928	946,609	1,015,584	68,975	91,557	22,582
1929	1,062,649	1,103,203	40,554	108,710	68,156
1930	953,331	1,082,949	129,618	105,618	—24,000
1931*	598,852	689,446	90,594	57,742	—32,852
Totals	6,034,036	6,519,918	485,882	594,885	109,003

*First eight months. (1)—Includes exports.

These facts cannot fail to lead to the conclusion that the over-supply of oil does not entirely rest upon imports, but that there has been a definite need in the United States for production control. That the limitation of production has played an important part in preventing over-supply during 1930 and 1931 cannot be denied, since the figures offer evidence of what has been accomplished. Last year, the industry succeeded in keeping supply below demand to the extent of 24,000,000 barrels; this year the figures for the first eight months reveal a net withdrawal from stocks of 32,852,000 barrels. Of course, if there had been no imports

during last year and this year, and it would have been possible to maintain the same rate of export business, the industry might have reduced stocks during those 20 months to the extent of more than 163,000,000 barrels. On the other hand, if there had been no imports and no exports, the difference between supply and demand during those 20 months would have been an over-supply of 23,000,000 barrels, instead of an actual withdrawal from stocks of 56,852,000 barrels. It is apparent, therefore, that the difference between imports and exports constituted a favorable balance that actually resulted in reducing the supply of oil.

Trade Balance Favorable

The history of the American petroleum industry's foreign trade shows that there has been a favorable balance year after year. From an economic standpoint, the difference between income and outgo has meant the consumption abroad of American oil. In Figure 2, this favorable balance is graphically shown, expressed in percentage of supply and demand. From January, 1925, to August, 1931, imports have ranged from 7.1 per cent to 10 per cent of the total United States supply. During the same period, exports have ranged from 12.5 per cent to 15.2 per cent of the total demand. This shows that there has been an average balance in favor of the American petroleum industry of about 5.3 per cent. Figures for the first eight months of this year show a favorable balance of only 3.7 per cent. Nevertheless, this has meant the actual consumption of American oil by foreign consumers. If we consider imports and exports purely from a supply and demand standpoint, it is apparent that over-supply does not exist in this department of the industry. There are, however, other considerations in the import and export situation which cannot be ignored.

Statements have been made from time to time that imports of foreign oil have not been curtailed to the extent that American producers have curtailed production. Analysis of supply factors for the first eight months of this year, compared with last year, shows that imports have been reduced to a far greater extent than production in the United States. For example, United States crude oil production has been curtailed under last year's output to the extent of eight per cent, whereas imports of crude have shown a decline under last year of 24 per cent. Refinery runs to stills, the yard-stick by which the refined oil production in the United States is measured, have been reduced under last year to the extent of six per cent, whereas refined oil imports show a decline of 13 per cent. Similarly, gasoline production is down but three per cent, while imports of gasoline have shown a drop of 16 per cent under last year. The weighted index of all oil production in the United States shows a decline under last year of seven per cent, while imports of all oils have dropped 20 per cent. These facts offer mute testimony that imports have not been quite so important a factor in the over-supply of oil as many believe. Figure 3 presents a graphic comparison of the percentage of decline in American and foreign supply factors. It tells at a glance how the various factors compare with last year on a percentage basis, last year representing 100 per cent.

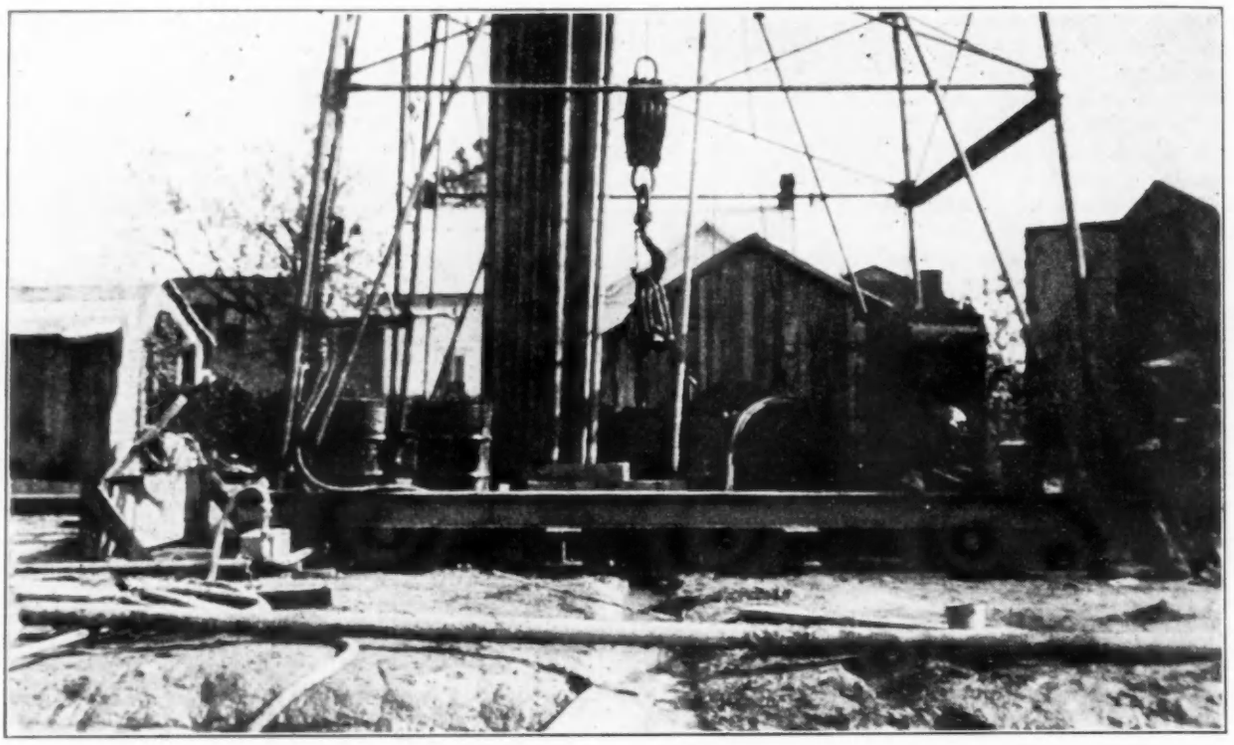
A factor in the import situation which cannot be ignored, particularly at this time, is the price situation. Obviously, low prices make competition more difficult and it is undoubtedly true that the chief reason for the sharp decline in imports this year has been the low level at which American petroleum and its products have been and are being sold. Although importers of foreign oil agreed late last year to curtail imports this year, which the facts show they have done, there might have been a somewhat different picture had American oil prices been maintained at substantially higher levels. Thus, we approach another angle in the foreign situation that presents a problem that really outweighs the effect of supply. After all, it is not the volume of foreign oil coming into this country that is causing concern, but the price at which it can be delivered. Here, again, the industry is confronted by economic law. If the American petroleum industry cannot compete with foreign oil prices, due to our higher standards and our inability to duplicate with greater efficiency the low production costs attributed to cheap foreign labor, then it is up to the industry as a whole to either force an embargo on imports or determine to fight competition with increased efficiency, low-cost production and super-salesmanship.

Tariff Possibilities

A tariff or an embargo offers a direct means of stifling an influx of cheap foreign oil, but by cutting off imports are we not also inviting an inevitable blockade of our export channels? The question before the industry today is not—How much oil have we?—but, rather—How much oil can we sell? I think everyone will agree that the petroleum industry has attained a high degree of proficiency in the art of production technique, and more lately, proficiency in the art of controlling production, but has neglected to improve its technique in the art of selling. I think there is an urgent need for more intensive selling methods and a greater realization of the opportunities for expanding the oil markets of the world. While we are bemoaning the fact that our potential oil supply is far in excess of market requirements, other nations are aggressively following up the opportunities by the constantly growing world-wide demand for oil. While we are counting our motor vehicles and worrying over the volume of oil being sold by cut-rate dealers, other parts of the world are assuming industrial importance, developing greater air services, increasing water transportation facilities, hauling their overland freight in motor trucks, and filling their highways with motor cars. All of this spells the consumption of oil. What are we doing about it?

As a nation and as an oil industry, we have perhaps become too self-centered. We overlook the fact that the rest of the world is also our market for petroleum and its products, while the rest of the world has not overlooked the opportunity to cultivate a market here for foreign oil. The law of supply and demand, plus production control, will undoubtedly adjust our oil supply situation; but an aggressive, world-wide selling campaign would undoubtedly make control of our supply less difficult. The figures contained herein speak for themselves. They point, on the one hand, to an apparent lack of reinforcement by sales efforts to prevent the slackening foreign demand for American oil, and, on the other hand, to the lack of evidence that imports have contributed chiefly to our over-supply.

Our own supply situation is rapidly being corrected through production control; economic law has lowered our imports practically in like ratio with the decline in exports. Are we going to be satisfied merely to attain equilibrium between supply and demand, or are we going to take advantage of the opportunities for increased consumption of American oil throughout the world and create a greater outlet for our plentiful supply? Closer attention to prospective market outlets for American oil will eventually result in less concern about over-supply.



They put this drill pipe in a "mouse hole."

Special Equipment *and Light* Used on "Midget" Wells

By WALLACE DAVIS
Staff Representative

THE latest thing in oil well drilling in East Texas is the "Midget well," in which one contracting concern is specializing, giving lease holders an "altered" turn-key job for $6000, or around one-third the average cost of a regular completed well in the field.

These "Midget" wells are getting a variety of comment from every direction, and much interest has been manifested in the pint-size operations since they are contributing some new angles to field methods. Perhaps some of this interest comes from wondering if some new problems also are going to result from this cheap entrance fee which will allow many of the shoe-string operators, who formerly have had to sit on the side-lines, to throw their hats in the producing ring.

"They're operating on these pine hills for appendicitis," commented one official of a major company after observing the "Midget" drilling job, "and draining them with a tube."

But they can find no law against drilling small holes with small equipment at a small cost, as long as the job is done to specifications laid out by the Railroad Commission of Texas' oil and gas division, or the city commissioners of the town in which the holes are drilled. And so the contracting company is keeping busy 24 hours a day, and the gate in East Texas is open to new ideas . . . find a lease holder with more acreage than cash on hand, name your own tools and pick out a convenient parking place. . . . No post-hole augurs nor prairie dog diggin' methods allowed!

John R. Bunn, Roy M. Johnson and Roy Guffey, owners of a small gasoline engine driven hydraulic rotary machine of their own design, drilled for Lone Star Oil Company in the Kilgore townsite, Griffin 1, to 3790 feet in 12 days actual drilling time, and the well was estimated as good for between 8000 and 10,000 barrels. At this writing Solar Drilling Company, drilling concern of the three above mentioned partners, were ready to drill in Gold Star Oil Company's Butts 1 after eight days drilling.

On these "Midget" wells Solar Drilling Company is setting 150 feet of 8¼-inch surface pipe and around 1000 feet of six-inch casing, the latter being the safety string required by the City of Kilgore to protect water sands where townsite wells are drilled. The remainder of the hole is

cut with five-inch bits, and three-inch casing (tubing) is set just over the sand. After the wells have been drilled into the sand and ready for completion, 1¼-inch tubing is set to bottom. In the case of the first well drilled at Kilgore, 1350 feet of one-inch was set to bottom, tapered onto the 1¼-inch tubing. As compared to the usual method of swabbing in the well, Solar Drilling Company washes the well with water and then pumps oil into the hole to start the flow.

Small Equipment

The hole is drilled from surface to top of the sand with 2½-inch A.P.I. drill pipe, using a 1¼-inch (I.D.) rotary hose built by U. S. Rubber Company for regular slush pit service. After the three-inch "casing" has been set and cemented from bottom to top of the hole, the operators rat-hole into the sand through this string, using 2⅜-inch A.P.I. (regular two-inch O.D.) flush joint drill pipe. The tubing, perforated on bottom, is run into the sand just prior to washing the well.

Circulation is furnished from a 5 x 7 Gardner pump driven by a 70 horsepower Waukesha motor. The same size Waukesha motor drives the drilling engine, developing 70 horsepower at 1050 r.p.m. Approximately 175 gallons of gasoline is required daily (24 hours) to fuel the two motors.

The drilling machine, patented by the owners, is chain driven throughout. Reduction from the motor to drum shaft is slightly more than 10 to one, while the ratio of the rotary table to the motor is about six to one. The rotary table is hydraulic, having a 15-inch verical stroke, and the "shot-gun" for breaking out tool joints is also hydraulically operated. Both hydraulic features are actuated by 1½-inch pump, using oil.

The drilling company is using an 88-foot tubular derrick of the regular combination drilling-pumping type except that it is not re-legged for the drilling job as in the case of handling average weight drilling equipment. They have a sub-swivel, equipped with roller thrust bearings.

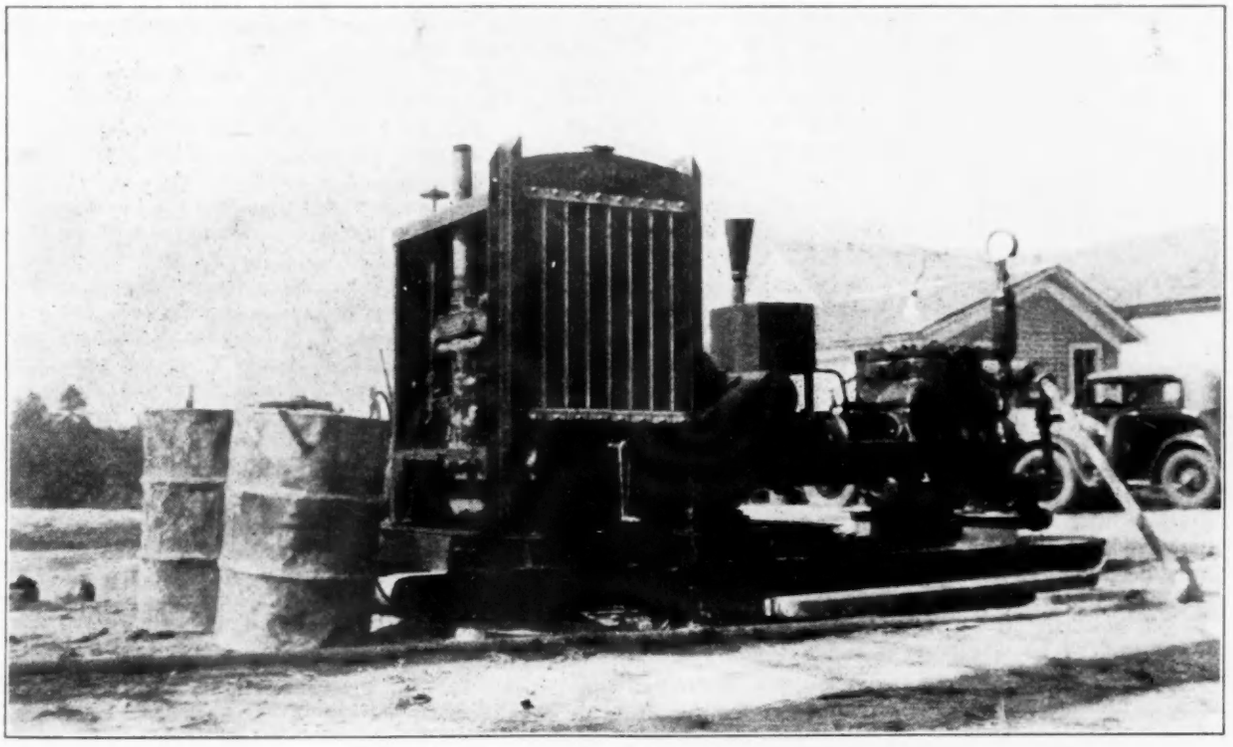
Lone Star Tool Company made special tool joints for the job, identical to regular A.P.I. tool joints except that they are 1½-inch I.D. instead of 1¼-inch I.D.

A pumping crown block is being used for the drilling job, and a three-sheave traveling block, weighing 600 pounds, formerly used as a casing block on an old shallow well, is running on a three-quarter-inch wire line. A 2½-inch set of tubing elevators and regular tubing slips are being used.

A special "Midget" size manifold was manufactured to specifications by Oil Center Tool Company for producing the well, including a three-inch tubing head that screws onto the three-inch tubing string and from which the tubing string hangs. There are two two-inch flow lines leading off from tubing and two two-inch lines leading off from casing, giving the set-up a three-inch gate valve and four two-inch flow line valves. The entire manifold, including valves, represents an investment of less than $200, as compared with the outlay of around $600 for the average Christmas tree in East Texas.

Operators, particularly prone to watch new ventures with a dubious eye, have picked out the paraffine problem as one of the first snags for the dwarf wells; but John Bunn and his associates had already figured that point and planned to cope with it. They will use the 1¼-inch tubing or that size combined with one-inch, as the case may be, only as long as the wells flow. Then they will pull the small plumbing and pump the wells through the three-inch. Then there are rumors of other weak points in the "Midget's" future well being. But certainly the ingenuity that contrived the smooth running machine that is drilling these five-inch holes nearly 3800 feet in a fraction more than a week has got the cards properly stacked for the hand that the East Texas pumping era is going to deal.

Anyway, they should flow 125 barrels a day for a long time . . . and that's as much as the biggest hole in the field will produce right now!



Complete power unit used on "Midget" well.

Suit Filed in Texas Charging Conspiracy by 15 Companies

By R. W. BYRAM, *Staff Correspondent*

AUSTIN, Texas.—Charging that a nation-wide conspiracy exists among major oil companies to control the retail markets of the country, Attorney General James V. Allred* filed suits against 15 major oil companies, asking their eviction from Texas and a maximum of more than $17,000,000 in penalties. Two associations of which these companies are members, the Texas Petroleum Marketers Association and the American Petroleum Institute, are also made parties to this suit on the grounds that they have been the instrument through which the companies have carried out the alleged conspiracy.

The petition names Standard Oil Company of New York, Standard Oil Company of New Jersey, Standard Oil Company of California, Shell Union Oil Company, Humble Oil & Refining Company, The Texas Company, Gulf Refining Company, Pasotex Petroleum Company, Continental Oil Company, Sinclair Refining Company, Magnolia Petroleum Company, Simms Oil Company, Shell Petroleum Corporation, Cities Service Oil Company, Texas Pacific Coal and Oil Company, Texas Petroleum Marketers Association and the American Petroleum Institute.

Allred charged that these companies, under the guise of complying with a "so-called code of practices," and with the purported approval of the Federal Trade Commission, had been engaged since November, 1929, in a systematic program of acquiring all independent filling stations in Texas, fixing the price of gasoline and other petroleum products, fixing the price of filling station equipment, lessening and eliminating competition among themselves, and generally dominating the marketing branch of the oil industry.

Forfeiture of Charters

The attorney general asked forfeiture of charters of the domestic corporations named as defendants, cancellation of permits to do business held by the foreign corporations named in the suit, liens upon the property of all defendants, and fines under the anti-trust laws from November, 1929, to the date of the suit, an elapsed time of about 700 days.

The minimum fine for violation of Texas anti-trust laws is $50 for each day of violation, and the maximum is $1,500. The attorney general thus charges that the defendants are each liable individually for a minimum fine of $35,000 or a maximum of $1,050,000; the total minimum would be $595,000 and the maximum would be approximately $17,850,000.

The suit was filed in the Fifty-Third district court which is presided over by Judge C. A. Wheeler. The action is the result of the appropriation of $30,000 by the Forty-Second Legislature of Texas for the purpose of investigating anti-trust violations by the oil companies. Allred has spent $2,700 of that amount in this investigation.

The petition further sets out the individual charges against each company, and states which officers and members of the corporation have been party to the alleged violations. The details of the American Petroleum Institute Code of Ethics, which has the approval of the Federal Trade Commission, is also set out in detail. It points out that although this code has been approved by that body, there was no law which permitted it to approve such an action or any other action which is in violation of the anti-trust laws of Texas or the United States. The method by which the American Petroleum Institute installed this code is detailed, and it is declared in the petition that this was all a scheme on the part of the defendants to evade the anti-trust laws through this organization, which was planned and subsidized by them. It should be noted that it is charged that in accepting this code, Gulf Refining Company included an exception which reserved for it the right to meet competition.

Following this action by the American Petroleum Institute, it is charged that the Texas Petroleum Marketers Association was set up for the purpose of carrying out this plan in Texas, and to deceive and mislead the public as to its true purpose and intent. L. H. Flynn is named as executive of this association, called the go-between to arrange and execute the orders of the association.

Further, it is charged that the aims and results of the conspiracy were as follows: restrictions in trade and commerce and aids to trade and commerce of petroleum products; price fixing; lessening competition in the manufacture, marketing, sale, and purchase of petroleum products; fixing the prices of station equipment, such as pumps and tanks; precluding and hindering free trade in station equipment; striving to limit the number of persons engaged in marketing petroleum products; limiting competition in marketing; and finally, bringing all named companies under one management and control.

Stop Loaning Pump

The petition takes up, step by step, the working out of this alleged conspiracy. It explains the discontinuance of loaning pumps and the requirement that each operator should put up $100 for each unit of underground equipment; it charges the discontinuance of furnishing pumps to airports; it cites the abolition of credit to lessees for installations or building driveways and canopies, and of lending equipment to tank car buyers. It details the abolition of making allowances for the privilege of installing pumps and tanks; of special inducements, such as sales, and the discontinuance of scrip books. It cites the posting of price which is tantamount to price-fixing and charges that price-fixing represents the true agreement. The limitation of commercial accounts is detailed, as defined by the code, and the refusal to make deliveries to tank wagons and to give refunds in event of price changes. The agreement not to acquire stations at one rental and sublet at a reduced rental and of entering upon a program of buying and owning filling stations for the purpose of distributing the products of the lessor, while putting into effect the 100 per cent dealer account program, is alleged, along with the elimination of the spread between wholesale and retail price of gasoline, first by cutting it two cents with a commercial discount, and secondly, by discounting commercial discounts and posting the same wholesale and retail prices.

It is not expected that the case will come to trail before the January term of court, and it will undoubtedly be contested in the highest courts should the state obtain judgment in the district court. The attorney general seems confident of a successful termination of the suit.

Much of the petition is based on the old suit which resulted in the forfeiture of the permit to do business of Waters-Pierce Oil Company in 1899. The charges of monopoly are very similar, but public opinion has changed materially since that suit was adjudicated.

*See page 53.

Attorneys Taking Depositions In East Texas Militia Suit

Houston.—Reports that the Federal Court suit of Brock-Lee Oil Company against the Texas Railroad Commission, Governor R. S. Sterling and General Jacob F. Wolters to enjoin martial law in East Texas would be dropped appear to be either erroneous or premature. Depositions were taken during the past week by attorneys representing Brock-Lee Oil Company et al, in Dallas, Fort Worth and Houston and reports were that the deposition of Governor Sterling would be taken in Austin late in the week.

Depositions had been taken toward the middle of the week from General Wolters, the railroad commission, R. R. Penn of Dallas, Charles Roeser of Fort Worth, T. J. Donoghue, vice-president of The Texas Company and Ray L. Dudley, publisher of THE OIL WEEKLY, Houston. U. S. marshals had a subpoena for W. S. Farish, president of Humble Oil & Refining Company but he was in New York and his deposition cannot be taken until his return. The case is scheduled to come up for trial in Federal Court in January.

The questions asked the witnesses varied in different instances. The depositions taken from General Wolters had to do largely with the state of affairs in East Texas at the time he and his troops took charge. General Wolters testified that he found a very tense situation and that citizens of the community told him that if martial law had not been put into effect they believed that pipe lines and tanks would have been dynamited.

His testimony that the danger of riots and destruction of property was imminent at the time martial law went into effect, made a considerable part of the record. He gave names of numerous citizens as authority for his belief.

The purport of the questions asked the publisher of THE OIL WEEKLY apparently was to develop the reasons back of Governor Sterling's martial law order. Long distance conversations between Mr. Dudley and Governor Sterling prior to and following martial law were inquired into.

Editorials and news stories from THE OIL WEEKLY were read into the record. It was the apparent aim of the attorneys for the complainant to show that martial law is the result of an attempt on the part of the governor to raise the price of oil.

Other questions were asked tending to show that conservation is but a cloak for higher prices, that the governor is a former oil man well acquainted with the economies of the oil industry and that it was the general opinion of the industry that the real reason for martial law was a desire to hold down production below demand and thereby improve the price of oil.

Mr. Dudley, however, in his deposition, stated that in his conversations with Governor Sterling prior to martial law, they had not discussed the price of oil, but had discussed the danger to the field and the waste resulting from the wide-open flow of oil prevailing in East Texas during the interim between the end of the old law and the date at which the new law was supposed to go into effect.

A question was asked about a long distance conversation between the governor and Mr. Dudley, taking place after the 225-barrel per well order was made and before the opening of the wells. It was developed that Governor Sterling inquired of Mr. Dudley as to what the price of East Texas oil would be the next day when the ban on production was lifted. Mr. Dudley replied in answer to questions that he told Mr. Sterling over long distance that he did not know but would endeavor to find out and advise him. He reported calling by phone three of the companies posting prices in East Texas and inquiring as to what the price would be. On being informed that the already posted price of 68 cents would continue he phoned the governor to that effect, he testified. He said that that was the only occasion on which price was discussed and said that this conversation came after announcement had been made that the wells would be permitted to flow again.

Mr. Dudley replied in answer to questions on the part of the governor's attorney that no mention of price or the economic structure occurred in a long distance conversation between Mr. Dudley at Tyler and Governor Sterling in Houston on Friday night two days before martial law was declared. It was brought out that Mr. Dudley, at the request of the committee of operators appointed at the Tyler mass meeting which demanded martial law, had arranged by long distance phone that night a meeting between the governor and the committee requesting martial law. Mr. Dudley said that the price situation was not mentioned in this or other phone conversations with Governor Sterling that day, but that the waste of oil and gas in the field was discussed at length.

He also testified that while he was in Tyler two days before the advent of martial law he was informed by reputable citizens of threats against pipe lines and tanks in the event that the orgy of production was not stopped. He testified, too, to hearing a telephone conversation between the governor and a prominent Tyler citizen—not in the oil business—in which the Tyler citizen told the governor that the situation was tense and that many of the citizens were desperate and might take desperate steps unless the militia were called in.

Plan Oil Exhibit at Chicago World's Fair

Chicago.—If present plans can be accomplished the petroleum industry will be amply represented at the World's Fair to be held in Chicago in 1933.

At the meeting of the Board of Directors of the American Petroleum Institute held last week a resolution was adopted recommending participation of the industry as a whole in preparing an exhibit of the development of the industry.

It is proposed to illustrate through working models and otherwise for the benefit of the public, the various accomplishments and problems of the industry and President Amos L. Beaty was directed to appoint a committee to canvas the industry to obtain necessary funds, now estimated at $160,000.

The committee is composed of Frank R. Coates, H. L. Doherty Company, New York; R. C. Holmes, The Texas Company, New York; F. A. Leovy, Gulf Production Company, Tulsa; H. L. Pratt, Standard Oil Company of New York, New York; E. G. Seubert, Standard Oil Company (Indiana), Chicago; E. W. Sinclair, Sinclair Consolidated Oil Corporation, New York; W. C. Teagle, Standard Oil Company of New Jersey; and the chairman, H. M. Dawes, The Pure Oil Company, Chicago, Ill.

Chicago.—The question of a tariff upon the importation of crude oil and refined products was again injected into the program of the American Petroleum Institute by motion before the Board of Directors at their Wednesday session during the twelfth annual meeting of the Institute here last week.

A resolution endorsing in principle the imposition of a tariff was voted with 20 directors voting in favor of, 16 opposed, 14 present but not voting and 21 absent. It was then voted to take a mail poll of all members of the Institute on the tariff proposal.

Oil and Gas Pipe Line Activities

▼ ▼ ▼

Chicago Line Has Total of 5940 Auxiliary Horsepower

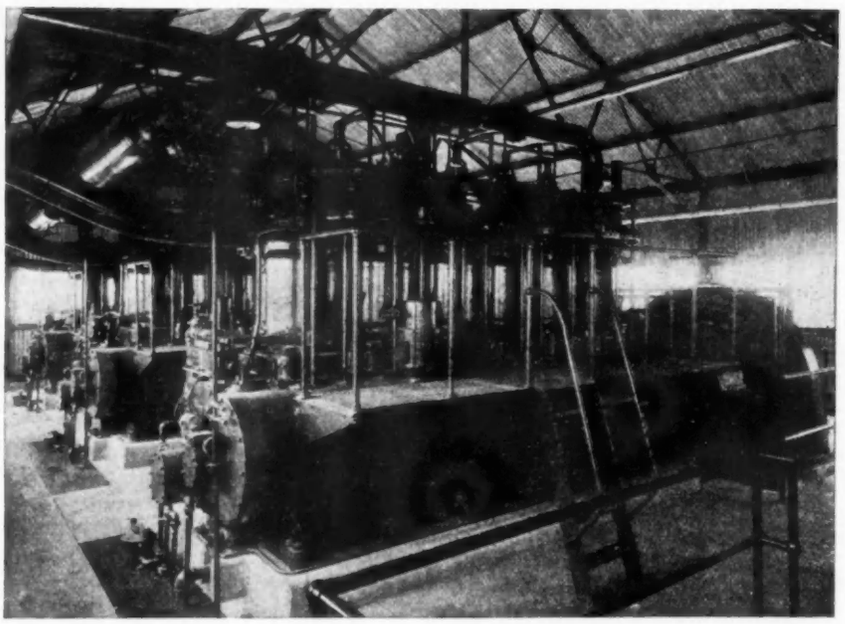
It is difficult to talk or write about the big Chicago line, with its high pressures and long mileage, and not use superlatives. Even the auxiliary power units, on a natural gas line of such magnitude, are bound to loom up importantly. Continuous generation of electricity for the 10 large compressor stations requires equipment with a combined rating of about 5000 K.V.A., or 4000 kilowatts.

The largest electric power plant on this $75,000,000 gas line is at Fritch, Texas. Nine similar plants are spaced at intervals of about 95 miles along the line to Illinois, and each serves as an auxiliary to a main compressor plant. All of the 21 generator units are of the very latest type. They are specially designed to operate in parallel, so that the generators in each station can be turned into the same electric system on the grounds.

In the first generating plant, there are three Cooper-Bessemer vertical gas engines with an individual rating of 420 brake horsepower. Each engine has six cylinders, with the usual 14¾-inch bore and 16-inch stroke. And each engine direct-drives a 280-kw., 2400 volt generator at 300 r.p.m. Alternating current is distributed to the various motor-driven auxiliaries (such as fuel-gas compressors, water pumps, etc.), and to the extensive lighting system inside and outside the different buildings.

In each of the remaining auxiliary plants, there are two Cooper-Bessemer vertical gas engines with an individual rating of 260 brake horsepower. Each engine is the four-cylinder, 14¾-inch by 16-inch type, directly connected to a 175 k.w., 480-volt, three-phase, 60-cycle alternating current generator.

If the practice on this Continental Construction Corporation line—and on a number of the other major gas lines constructed during the past few years—is any indication, the vertical four-cycle multiple-cylinder type of gas engine seems to be favored for driving generators. It is customary to install these compact units in a separate building, which is constructed to the same standards and contains facilities as modern as the main building.



Three Cooper-Bessemer units totaling 1260 brake horsepower and generating 840 kilowatts in auxiliary plant at Fritch, Texas, on Chicago line

Builder of Big Gas Line Has Background of Experience

Bartlesville, Okla.—Floyd C. Brown, vice president and general manager of Continental Construction Corporation, is directing a company that was formed to provide Chicago and vicinity with natural gas from the Panhandle of Texas. Mr. Brown graduated from Stanford University in 1911 and received from the same university in 1913, the Degree of Engineer. He was an outstanding athlete in college and was later head football coach at Stanford for a period of four years. During this time he was also instructor in mathematics at the College of Pacific and at Stanford.

FLOYD C. BROWN

Mr. Brown was employed by Shell Oil Company of California as construction engineer before joining the Empire Companies as assistant superintendent of construction in 1917. He served in the capacity of superintendent of construction, assistant chief engineer, manager, Empire Pipe Line and chief engineer, and from 1923 to 1926 as assistant general manager. From 1926 until being assigned to the Chicago gas project, he was vice president and assistant general manager of the various oil and gas operating units of the Empire Companies.

When considering the project of supplying gas from the Panhandle of Texas to Chicago, Cities Service Company, upon being designated as in charge of construction, delegated Mr. Brown to work up the project and construct the line. This was in October, 1929.

The undertaking was a real one, perhaps one of the largest gas pipe line projects to date, which is shown by the following. The main line transmission system of the Chicago project contains 905 miles of 24-inch O.D. pipe, and the gathering system 75 miles of 24-inch pipe, and about 150

miles of smaller sizes. The telephone system contains 1287 miles of telephone line that required 5014 miles of telephone wire. This system connects Amarillo and several other points in Texas with Chicago, Illinois, and provides communication to the 10 compressor stations along the main pipe line.

The gas is transmitted by 10 compressor stations, nine of these stations containing five 1250 H.P. gas engine driven compressing units each, and one station containing 12 1250 H.P. units. The latter is the largest compressing station in the world. This makes a total of 57 1250 H.P. units on the line, having a total H.P. rating of 71,250 H.P.

At the initial operating pressure of 610 pounds, the line has a capacity of 175,000,000 cubic feet per day. The line is so designed that the pressure can be raised to 800 pounds when the load justifies this step. In the design of the entire project, and in the purchase of right-of-way, provision were made for building a second line of equal or larger size should conditions warrant.

The gas supply for this project is secured partly from the acreage held by Canadian River Gas Company in Texas, but the larger portion of the gas will be produced from 375,000 acres located in the Texas Panhandle, dedicated to the pipe line project by the various participants.

The partners that have made this project possible are Cities Service Company, Columbian Carbon Company, Insull, Son & Company, The Texas Company, Southwestern Development Company, Standard Oil Company of New Jersey, Skelly Oil Company and Phillips Petroleum Company.

Mr. Brown is still active in handball, hunting and fishing, and a great enthusiast of out-door life in general. He is interested in college activities and at present is a member of the Stanford national board, which serves in an advisory manner to the board of trustees.

Texas Largest Producer Of Natural Gas in U. S.

Washington, D. C. — A report showing the result of natural gas developments in 1930, prepared by the U. S. Bureau of Mines, places Texas again in the lead as the largest natural gas producing state, with a total output during 1930 of 517,880,000,000 cubic feet. This represents a gain over 1929 of 11 per cent. Despite this gain in production, Texas consumers of natural gas were obliged to use 8,280,000,000 cubic feet of gas produced by surrounding states, total consumption having amounted to 526,160,000,000 cubic feet. This placed Texas first, also, as the largest consumer of natural gas in the United States.

Total production of natural gas in the United States during 1930 amounted to 1,943,421,000,000 cubic feet, an increase over the preceding year of 1.3 per cent. While this rate of gain was considerably below the annual average for the past 10 years, it represents a creditable showing in view of the curtailment of crude oil production. At the same time, this production figure did not include large quantities of gas blown into the air in connection with flush oil field developments. Consumption of natural gas exceeded production to the extent of 1,777,000,000 cubic feet, although the difference between production and consumption represented quantities of gas exported by pipe lines into Canada and Mexico. Because of curtailment in drilling, the number of gas discoveries in 1930 undoubtedly fell below the 1929 total. However, the number of gas wells completed was practically the same as for the preceding two years. Gas wells completed in 1930 numbered 2866. The quantity of initial production from new wells in 1930 was pointed out by the Bureau of Mines to have constituted a new record, since a large number of wells completed represented developmentof reserves for future requirements.

New developments were chiefly concentrated in Kentucky, Kansas, Pennsylvania, New York and Mississippi. The number of wells completed in Kentucky was practically double the number completed in 1929, while a substantial gas reserve was built up in the Hugoton, Kansas, gas field through completion of 80 wells in that area. Large gas wells were completed during the year near Tioga, Pennsylvania, and Dundee, New York, arousing great interest in the possibility of supplying New York City and New England with natural gas. The Jackson field in Mississippi came in for considerable development during 1930 and a number of very large wells were completed that aided in building up a reserve supply for the pipe line system running into Alabama and Georgia.

The number of domestic consumers of natural gas showed a material increase over 1930, although the gain was much less than that experienced in 1929. The number of domestic consumers in 1930 amounted to 5,448,000, an increase over 1929 of 350,000, or seven per cent. Domestic and commercial natural gas consumption in 1930 amounted to 376,407,000,000 cubic feet, an increase over the preceding year of five per cent. The average consumption per domestic consumer continued to fall off and for 1930 amounted to 69,100 cubic feet, as compared with 70,600 cubic feet in 1929.

On the basis of prevailing prices, each domestic consumer paid an average of $4.39 for natural gas in 1930, compared with an average of $4.38 in 1929. The increased cost in the face of a drop in total used resulted from an increase in the average price to the consumer. Gas used for industrial purposes in 1930 amounted to 1,565,237,000,000 cubic feet, an increase over 1929 of .5 per cent. Of the total industrial consumption, 723,165,000,000 cubic feet or 46 per cent was used for field purposes; 266,625,000,000 cubic feet, or 17 per cent, was used in the manufacture carbon black; 120,290,000,000 cubic feet, or eight per cent, was burned as fuel by electric power plants; 98,842,000,000 cubic feet, or six per cent, was utilized as fuel by petroleum refineries; 41,256,000,000 cubic feet, or three per cent, was burned at Portland cement plants, leaving 315,059,000,000 cubic feet, or 20 per cent, for miscellaneous industrial purposes. Miscellaneous uses included natural gas used by steel plants, glass works, ice plants, brick and terra cotta establishments and many other industries where the absolute control of temperature is necessary.

The industrial depression caused a decline in consumption of natural gas in such industries as petroleum refining and in numerous of the process industries that were forced to curtail operations during 1930.

The approximate number of producing gas wells, as of December 31, 1930, totaled 55,020, an increase over the preceding year of 1475. The total number of gas wells completed in 1930 amounted to 2866, which indicates that there were about 1400 gas wells abandoned during the year. Pennsylvania, with nearly 20,000 gas wells ranked first; West Virginia, with 12,983 wells was second. Ohio led all states in the number of gas wells completed, having a total number of completions in 1930 of 653. Texas, Oklahoma and West Virginia with 483, 403 and 397 completions, respectively, followed Ohio in rank. Of these, only Oklahoma showed an increase in production over 1929. The report also states that the natural gas pipe line mileage of the United States, as of July 1, 1931, totaled approximately 50,000 miles of trunk lines, as compared with about 40,000 miles in the preceding year.

Personal Mention—Men You Know

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EDWARD L. SHEA, for 14 years an active member of Tide Water Oil Company's staff in various departments, has been appointed executive vice president in charge of all the company's operations, it was announced last week by Axtell J. Byles, president.

Mr. Shea until recently was vice president in charge of sales, but he is particularly fitted for his new and enlarged responsibilities, because of his years of experience with the company in practically all branches of the business, including the producing, refining and sales operations.

EDWARD L. SHEA

Starting as a salesman for the company in the New York territory, Mr. Shea later spent considerable time at the great Bayonne refinery. He then was transferred to the producing fields in Mexico.

His first major executive post was vice president in charge of manufacturing, which he held prior to his oppointment at vice president in charge of sales.

Mr. Shea's new responsibilities will include, besides those he has held in the past, many other phases of the company's activities embraced under the heading, "all the operations of the company."

L. L. BRUNDRED, who has been in Pittsburgh for the past several weeks visiting the welded pipe and seamless tube mills of Spang, Chalfant & Company, Inc., is returning to Los Angeles, to assume the duties of his new appointment as manager of sales in the southern California district for the above mentioned company.

Mr. Brundred is well qualified as a pipe representative for this "oldest operating pipe mill in America," having been born in Oil City, Pannsylvania, the very origin district of the oil industry, educated at West Point, served in the regular army corps during the World War, and prior to his present assignment has been associated with Crown Central Petroleum Company, Brundred Oil Company, National Supply Company-Texas, and with his brother, B. F. Brundred, in the firm of Brundred & Brundred, petroleum engineers of Los Angeles.

C. M. FULLER, formerly president of Richfield Oil Company of California, is now connected with Emblem Petroleum Corporation of California, a new company organized to refine and market gasoline from California crudes.

WILLIAM M. KECK, president of Superior Oil Company, is visiting Mid-Continent cities. He attended the sessions of the A. P. I. at Chicago and will return to Los Angeles later in the month.

E. R. BROWN, president, Magnolia Petroleum Company and vice-chairman of the board of directors of Standard Oil Company of New York, has tendered his resignation as a councilman for the city of Dallas, where his residence has been maintained, because of business matters requiring extended absence from the Texas metropolis. Mr. Brown has been a leader in civic work in Dallas and Texas for years, and was among the first councilmen elected when the city adopted the city manager form of government.

HOMER PLUMMER, who has been production manager in the Oklahoma-Kansas division for Pure Oil Company with offices at Tulsa, is now located at the general offices of the company at Chicago as assistant to R. W. McIlvain, vice-president in charge of production.

EDWIN C. CARNES, 58, petroleum engineer and operator, died at his home in San Angelo, Texas, November 16. He was superintendent of production in West Texas for Transcontinental Oil Company prior to the latter's merger with Mid-Kansas Oil & Gas Company, and had extensive service in foreign fields while working for the former concern. A widow and three sons survive.

MICHIO NARITOMI sailed recently from Kobe en route to Samarinda, Borneo, where he has accepted a position as chief engineer with Borneo Olie Maatschappij (Borneo Oil Company) subsidiary of Nippon Oil Company, Ltd.

Engineer Naritomi, who served his apprenticeship in the Gulf Coastal fields, is affectionately remembered in this country as "Tommy." After returning to his homeland, he became field engineer for Nippon Oil Company in the Takamachi district of Japan.

Engineer T. Hoshi is superintendent of the Takamachi field and Engineer N. Yamada is district manager for Nippon Oil Company at Kashiwazaki, Japan.

Borneo Oil Company is commencing the development of a concession in that colony.

T. HOSHI N. YAMADA MICHIO NARITOMI

▼ PERSONAL MENTION—MEN YOU KNOW ▼

J. H. BAIRD, manager of the export sales office Oil Tool Division of Byron Jackson Company in New York, sailed November 5, 1931, for a short trip to Europe on business for the company.

Mr. Baird plans to visit the head offices of various oil companies at both London and The Hague and will return to reach New York about December 1.

JOHN R. DALLERUP, vice-president of Reed Roller Bit Company, Houston, has returned to the United States after an extended tour of the oil fields of Europe and the Orient. Sailing from San Francisco, his itinerary included the oil fields of Japan, the Dutch East Indies, Burma, Assam, the Punjab, and Germany, as well as The Hague, London, and Paris.

JOHN R. DALLERUP

A. E. RAINE, general sales manager for the Oil Tool Division of Byron Jackson Company, left Los Angeles on November 7, 1931, with a party of officials from various oil companies in California to attend the meeting of the American Petroleum Institute in Chicago.

On his return Mr. Raine will meet C. F. (Bud) Vincent, Mid-Continent manager for Byron Jackson Company, at Tulsa and will cover the Mid-Continent territory, touching at Oklahoma City, Fort Worth, East Texas and Houston, in company with Mr. Vincent before returning to California about the first of December.

DR. W. R. CALVERT, San Antonio, Texas, has just returned from a six weeks' stay in Cuba, where he made a survey of oil possibilities in Cuba for New York and Texas interests. He found numerous asphalt seepages, serpentine outcroppings and other favorable indications of oil.

He reports the Atlantic Refining Company has been doing considerable torsion balance work in Cuba for the past two years and that now Standard Oil Company of Ohio has geologists and land men there. Olympic Refining Company is also doing considerable preliminary work on the island. The latter is a subsidiary of Dollar Steamship Line. Calvert expressed it as his belief that Atlantic Refining Company would likely start development work there early next year.

R. A. BROOMFIELD, president of Barnsdall Oil Company of California, will return to Los Angeles this week, following an extended Eastern trip.

RALPH B. LLOYD, president, Rush M. Blodget, general manager, and F. D. Anderson, director, of Oil Producers' Sales Agency of California, are in Chicago.

CLYDE ELLWOOD, foreign representative of Axelson Manufacturing Company, has returned to Los Angeles headquarters following a trip of some months, visiting Germany, Roumania and Poland during his travels. He feels rather optimistic over the outlook for foreign business next year.

TOM J. CANNON, California operator who died at Tyler, Texas, last week, was a colorful character in the Long Beach field. He had many reversals in the oil business before making a decided success at Signal Hill. He was 59 years old.

JAMES V. ALLRED, 32-year old attorney general of Texas, is reported to have taken himself to a ranch in old Mexico after filing suit November 12 against 15 nationally known oil companies, alleging violation of anti-trust laws and demanding forfeitures of charters and permits to do business in Texas and penalties of $17,850,000.*

Trust bustin' is what Jimmie's fondest of, they say, and the ex-shineboy, ex-gob intimates he's gathered enough low-down in this instance to "shock the nation." Jimmie has "shocked the nation" before in his local campaign efforts when he chose as targets of his virile oratory the chain stores and public service corporations. His attack was withering, but something must have run amuck. Both are still doing business in the grand old Lone Star state just as though the young L.L.B. graduate hadn't ever objected.

It is said that James V. Allred used to peddle the Chicago Blade and Ledger on the streets of Bowie, Texas, when he was a lad. The vocal exercise necessary in such activity, together with the blood-and-thunder nature of the editorial content of that sheet, may have constituted the background for his somewhat melodramatic gestures.

But looking at Jimime's trust-bustin' proclivities from another angle, maybe he figures it really doesn't amount to a hill of beans, as Amos Beaty says, whether his righteous indignation against the oil companies is justified by the judiciary or not. Maybe Jimmie "hath a lean and hungry look" every time he casts eyes on the soft, comfortable cushion in Ross Sterling's chair. If it's limelight Jimmie needs to give him a chance to sit on that cushion, then Jimmie might arrange enough suits, or something or other, to hold that limelight—if the cushion still intrigues him.

JAMES V. ALLRED

In the light of the above it may sound paradoxidal, but the young attorney general has more soap than he may be given credit for in some quarters. He is not to be reckoned with hurridely by legality's light artillery. And our information is that although the defendants named are not sure whether he will open fire with pop-guns or Big Berthas, they are loading for bear.

*See page 48.

Oklahoma--Kansas Field Notes

FLOYD SWINDELL, *Staff Representative, Tulsa, Oklahoma*

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Ritz-Decker-Garrett Area's Activity Declines Gradually

Wichita, Kansas.—Activity in the Ritz-Decker-Garrett area of McPherson County, has shown a gradual decline over the past few months but still leads the state, in the total number of operations and importance of completions.

Development of the area principally in 1930 and 1931 came at a time when Shell Petroleum Corporation, which owned most of the acreage, did not care to enter an active campaign. This resulted in a widespread "farming out" of properties to various companies and individuals, most of which owned drilling tools. Leases on a majority of the acreage had been taken late in 1925 and in 1926 for a period of five years. Drilling obligations forced the drilling of a large number of wells at a time when the industry was fighting to reduce production and the price for oil was near the bottom. Most of these obligations have been satisfied and activity is expected to taper off during the coming months.

The Canton area, which lies in Sections 15, 16, 17, 20, 21, 28 and 29-19s-1w, is still undefined and probably will be the leading sector during the remainder of the year.

The drilling report of November 9, showed 20 drilling wells, seven locations, four rigs, and eight shut down. Foraker et al's Tinsley 1, NW NW SW Section 5-20s-1w, approximately one-half mile east of production in the Ritz pool, had Viola limestone at 3441 feet, Wilcox sand at 3485 feet, and discontinued drilling at 3500 feet. It is to be plugged back to Viola limestone where it had a small showing of oil. Mohawk and Deep Rock Oil Corporation's Nannie McGill 1, SW SW NE Section 7-20s-1w, extended production in the Ritz pool two locations east when it pumped 681 barrels the first 24 hours from Viola limestone at 3406 to 3408 feet. Six-inch casing was set on top of the chat at 2938 feet. At 2982 feet the well showed 2,000,000 gas, 100 barrels of oil, and 200 barrels of water. Derby Oil Company and Empire Oil and Refining Company's Domsch 4, NW NW NW Section 6-20s-1w, in the Ritz pool, was completed for 884 barrels on the pump after swabbing at the rate of 36 barrels per hour from Viola limestone at 3406 to 3426 feet. Top of the chat was encountered at 2924 feet and base of the Mississippi lime at 3170 feet.

Sinclair Oil and Gas Company and Wolf Creek Drilling Company were swabbing at the rate of 50 barrels of oil per hour and cleaning out at their McMurray 1, NE NE NE Section 1-20s-2w, near the structural axis of the Ritz pool. Top of the chat was encountered at 2924 feet and at 2996 feet the well was estimated good for 4,000,000 gas and 25 barrels of oil per hour. Five-inch casing was set on top of the Viola limestone at 3403 feet and the formation shot with 20 quarts from 3403 to 3423 feet; total depth is 3425 feet.

Olson Drilling Company and Shell Petroleum Corporation were shut down at 3397 feet at their Koehn 4, SW NE SW Section 36-19s-2w, in the western portion of the Ritz pool. At 2967 feet, 47 feet below top of the chat, the well was making a flow of about 15 barrels every 12 hours and at 2980 feet the hole was full of water. Six-inch casing was set on top of the Viola at 3373 feet and the formation shot with five quarts between 3387 and 3392 feet; total depth is 3397 feet.

Failure of this test and others in the immediate vicinity to find sizeable production in the chat hroizon has demonstrated the erratic nature of that formation and has shown conclusively that structural location is secondary to the condition of the producing formation. Dickey Oil Company's Eva Decker 1, SE SE SE Section 35-19s-2w, largest well in the area and producing from the chat, is located less than a half-mile southwest of Olson's Koehn 4 and in a direction which should make it considarably lower on structure.

Vernon Oil and Gas Company and Shell Petroleum Corporation's Drum 1, NE NE NE Section 35-19s-2w, an old chat producer being drilled deeper, swabbed 720 barrels in 18 hours after being shot in Viola limestone at 3375 to 3382 feet. Top of the Viola was encountered at 3368 feet. This well was a small producer in the chat horizon when completed in March, 1931.

Youker et al's Lagree 1, CSW NW Section 7-19s-1w, almost a mile east of production in the Decker field, probably will be abandoned after its failure to show commercial production in the Viola limestone at 3442 to 3448 feet. This has been an exceedingly interesting test because of its location in the direction of a syncline which is believed to parallel the eastern edge of the Decker structure. At 2943 to 3010 feet in the chat horizon, a show of oil and gas and a hole full of water were encountered. Base of the Mississippi limestone was logged at 3163 feet and top of the Viola at 3442 feet.

Deepening Campaign Now in Progress At Eastborough

Wichita, Kansas.—An active deepening campaign is now in progress in the Eastborough pool of Sedgwick County, with seven old wells being deepened and four new tests scheduled to go to the Wilcox horizon.

Continental Oil Company's Nagel 1, CSE NE NW Section 19-27s-2e, will be plugged back to the chat after finding a hole full of water in Wilcox sand at 3370 to 3419 feet and Arbuckle "siliceous" limestone at 3419 to 3434 feet. It originally produced from the chat horizon.

Derby Oil Company's Eastborough Estates 1, SE SW NE Section 19-27s-2e, was rigging up to drill deeper from 2961 feet in the chat. The company's Eastborough Estates 2, SE SW NE of the same section, was drilling below 3000 feet. It is also an old chat producer.

Other operations in Section 19-27s-2e are as follows: Derby's Eastborough Estates 5, NW SE NE, old well drilled deeper, was plugged back to the chat where it pumped 70 barrels. Due to a bad fishing job the hole was lost at 3190 feet without having reached the Wilcox sand. The company's Eastborough Estates 7, twin to Number 5, was drilling below 1200 feet. Fisher and Lauck's Trustee 8, NW NE SE, old chat producer, was pulling rods and preparing to deepen at 2963 feet. The same operator's Trustee

9, SE NW SE, a new test, was drilling below 1975 feet. Magnolia Petroleum Company's Wheeler-Kelly-Hagny 1, SW SE NE, an old well, was drilling below 2975 feet. Swartx et al's Hull 1, SE SE NW, a new test, was having casing trouble with total depth at 2965 feet. Seigel et al's Soukup 1, SW NE NW NE, another old chat producer, was fishing for tools with total depth at 3017 feet.

Magnolia Petroleum Company's Vickers 3, SE SW SW Section 17-27s-2e, in the northern portion of the pool, is a rig and a twin to Number 1. Ramsey's Davies 2, SW SW SW, of the same section was drilling below 825 feet. It is a twin to the company's Number 1.

Oklahoma City Operations Show Slight Increase

Oklahoma City.—One well was completed in the Oklahoma City pool during the week ending Saturday, November 14, bringing the total number of completions to 845, of which 39 are now gas wells. Review of Saturday morning's report showed 30 active wells, 10 shut down, six locations and two rigs. This is a slight pick up in active wells over the past three weeks due to the spudding of five new tests by the T. B. Slick interests. Nine wells were drilling below 6000 feet or had set the last string of casing and were waiting on cement to set.

Kessler Oil & Gas Company's Canning 1, SE SE SE Section 22-11n-3w, is due to start bailing early in the coming week and should be the next completion on record. This test, which is a west offset to Phillips-Shell's Egermeier 1, probably will be bailed down and shut in without gauge since Oklahoma City is planning a celebration on December 4, commemorating discovery of the pool in 1928 and plans to have the well officially completed on that date as part of the program.

Wilcox Oil & Gas Company and Marshall's Marshall 1, SE SE NW NW Section 10-11n-3w, lone completion of the past week, flowed 4100 barrels the first four hours along with gas at the rate of 25,000,000 cubic feet. Production is coming from 210 feet of Wilcox sand topped at 6330 feet. The following wells are next in line for completion:

Clara Oil Company's Springer 1, NW NW NW Section 2-11n-3w, six-inch set at 6242 feet, total depth 6252 feet; Anderson-Kerr et al's Harrison-Smith 1, NE SW SW NW Section 3-11n-3w, set six-inch at 6395 feet, total depth 6415 feet; R. A. Wallace's (formerly Julian O.&R.) White 1, SW SW SE Section 3-11n-3w, seven-inch cemented and shut down at 6281 feet; Mid-Texas Petroleum's Buxton 1, SW SW NE NW Section 3-11n-3w, set nine-inch at 6317 feet, total depth 6337 feet, shut down for boiler repair; Anderson-Prichard and Plains Pet., Little 1, NW SE NE Section 10-11n-3w, set six-inch at 6312 feet, total depth 6347 feet; Anderson-Kerr's Metcalf 1, SE NE SW Section 15-11n-3w, total depth 6448 feet, running six-inch casing; Keene-Oklah's Ohio 1, NE SE NW SE Section 15-11n-3w, total depth 6473 feet, fishing for tools; and Coate Oil Company's Smith 1, NE NE NW Section 15-11n-3w, set nine-inch at 6347 feet, total depth 6385 feet.

Chandler, Oklahoma.—Hilton Phillips' Phillips 1, SW SW NW Section 2-14n-3e, wildcat test located about two miles northwest of the West Chandler pool in Lincoln County, was attracting considerable attention at the end of the week when it encountered oil in what is believed to be the Prue sand at 4080 to 4105 feet after having had base of the Oswego at 4055 feet.

According to reports the upper portion of the sand showed oil saturation and the lower five feet indicated the presence of water. A show of gas was encountered in the Oswego. Operators will drill ahead and test the Wilcox sand and if that formation is found dry the hole will be plugged back for a positive test of the Oswego and Prue horizons.

This test is located on a seismograph high but in an area where surface conditions are complicated and indistinct. Nearest production is from the Simpson formation in the West Chandler pool where several large wells have been completed between 5000 and 5200 feet in the upper portion of the formation.

Make Ready to Pump Wildcat Rice County Discovery Well

Wichita, Kansas.—Hinkle et al were running tubing preparatory to pumping their Sharpe 1, SE SE NE Section 13-20s-10w, wildcat discovery approximately three miles northeast of the Schurr-Raymond pool in southwestern Rice County. This well was completed on April 22, 1931, and shut in for want of outlet. Short time gauges indicated that it might be good for 2000 barrels but it is not likely to do this amount on the pump. Production is coming from Arbuckle limestone at 3330 to 3338 feet.

Charles Hilligos et al's Isern 1, CSW SE NE Section 12-20s-11w, three miles northwest of the pool, pumped 482 barrels the first 24 hours after having swabbed at the rate of 15 to 20 barrels per hour. It is impossible to determine at this time whether this new discovery will be an extension to Schurr-Raymond pool or on a separate structure. The pay formation, tentatively identified as Arbuckle "siliceous" limestone was encountered at 3315 feet and penetrated to 3328 feet. Accepting the correlation as correct the Isern 1 is 25 feet structurally higher than wells in the north end of Schurr-Raymond pool and its location on the regional structure indicates that it is probably a separate accumulation.

Derby Oil Company has announced location for a south offset, being in NW NE SE Section 12-20s-11w.

Oklahoma Deep Test to Stop At Present 10,079 Feet

Cement, Oklahoma.—According to reports from Mid-Kansas Oil & Gas Company the Preston Culp 6, NW NW NE Section 6-5n-9w, deepest well in the United States, will go no deeper than its present depth at 10,079 feet.

During the cementing of 9777 feet of 6⅝-inch casing difficulty was experienced in getting circulation and operators were finally forced to cement through the annular space between the 6⅝ and nine-inch strings. Use of this reverse method prevented the running of a measuring line to determine the exact point to which cement was run. Determination had to be made entirely on the basis of the calculated annular space which could not be accurately made because of the unknown diameter of the hole from 5515 feet down.

It was known that the hole had caved but no accurate factor could be applied. Apparently the 1875 sacks of cement failed to reach bottom and it was believed that several of the lower joints of 6⅝-inch casing were not cemented. The hole probably will be plugged back by stages and each showing tested. Undoubtedly it can be converted into a large gas well from sand at 8735 to 8820 feet, where it threatened to blow out when the formation was being drilled. A complete history of the drilling of this record test will be carried in an early issue of THE OIL WEEKLY.

News From California Fields

BRAD MILLS, ***Staff Representative, Los Angeles, California***

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North Dome Completions Have Impressive Potentials

Coalinga, Calif.—The most recent completions on the North Dome at Kettleman Hills have been remarkable producers in several respects, but the tendency to flow the wells through several large beans to establish extremely impressive potentials is not considered good practice. Operators who are striving to make the best showing have been careful to strain their wells for only a short time, however, and it might be well to overlook the little breach of etiquette to satisfy a desire to go on record with very large completions. The first completions were brought in with fewer and smaller beans, but all of the more recent producers were equipped to flow at full capacity, even if for only a short time. The first large completion set a record which other operators are anxious to exceed.

Kettleman North Dome Association's most recent completion, Milham 25-28J, established a new record for the field, flowing at a 30,000-barrel rate for a few hours. Four 160/64-inch beans were used for this short flow test, but the well was immediately pinched back to produce through one 41/64-inch bean and production has settled to 3750 barrels of 37 gravity oil. A cut of three per cent is not viewed with alarm, but it is somewhat higher than the average for the district. The well was completed at 8297 feet. The 9⅝-inch casing was cemented over the Temblor formation at 6823 feet and 1615 feet of 6⅝-inch liner run and cemented through perforations to shut off the upper gas zone. The gas flow at the peak of the production test did not exceed 40,000,000 cubic feet, but the gas-oil ratio at the present rate is not quite so good. The gas production of 15,000,000 cubic feet falls considerably below the maximum allowed by the state and is not considered excessive. A still lower gas flow may be achieved. While not an extreme edge completion, No. 25-28J is near the original theoretical producing line and is a remarkable producer for a flank completion. The northwest tip of the North Dome has been more productive than any other part of the field.

Petroleum Securities Company is coring around 9100 feet in Burbank 1, Middle Dome test, and the outlook is extremely doubtful. The formation is running to a hard gray silty sand, with no definite markers to expect at such a depth. The 8⅝-inch shut-off was successful at 7326 feet and streaks of sand which showed gas and oil were cored above 8000 feet. The formation has proved a disappointment below 8000 feet and the only hope for production seems to lie in a test of the upper showings. Elimination of the Middle Dome would remove what was once a threat, but it is not yet safe to condemn a very questionable district. Failure to find a heavy oil zone several hundred feet below the last shut-off pointed to a disappointment, and the omen seems to have been well founded.

The Middle Dome embraces from 2500 to 3000 acres and the closure was apparently satisfactory for production. Possibility that surface indications have been misleading and that the Middle Dome may have a more direct connection with the North Dome than originally thought looms. Some geologists think that if the Middle Dome does not produce, it will be the first time in California that a closed structure has failed. Further development may still offer a satisfactory explanation for a failure of such a part of the structure.

North American Oil Consolidated should find a heavy oil sand below 9100 feet in Blauvelt 1, edge test on the North Dome, if the well is located structurally as favorably as surface lines indicate. This very deep well did not effect a shut-off over the Temblor much above 8600 feet and at least 500 feet should be allowed before expecting the black oil zone found in indirect offsets higher up structure. The company's Elsinore 1, Section 36-21-17, is coring for the Temblor zone at 7720 feet and will run casing as soon as the marker above the objective is found.

Los Cerritos Development of Deep Zone Possibilities, Eases

Long Beach, Calif.—Less than a dozen wells are now trying to develop deep production in the Los Cerritos district, but activity in other parts of the field is holding up well. About 25 wells are making hole outside of Los Cerritos extension, and deepening, cleaning out and repairing of many older wells is being considered. A mild wave of optimism swept the field a few weeks ago, but the effect was not as permanent as desired. Small premiums for oil were offered, but the percentage which is being moved at a substantial figure above the regular posted price is small. A better demand for oil will stimulate field work, especially repairing and cleaning out operations. Absence of important developments will act as a check on drilling from the surface and deepening operations.

The Los Cerritos extension flared up slightly after the discovery of an 8000-8100-foot zone, but the lack of uniformity of completions checked operations. Assurance of the need for more oil may lead to drilling of many locations on some of the larger leases, but this work will not be started short of a firmer footing. The east and south slopes could stand more activity, but some water trouble appeared in these districts during the most recent development.

Deep Test on Northwest Flank of Lost Hills Field Suspended

Bakersfield, Calif.—Lincoln Petroleum Company has suspended operations in Theta 1A, deep test on the northwest flank of the Lost Hills field, after a series of production tests at 5329 feet. Oil sand was cored below the 4¾-inch shut-off at 5229 feet, but a combination of mechanical troubles and lack of pressure in the formation could not be overcome. The hole was cleaned out to the bridge at 5275 feet and liner landed at that point for the final production test. Tubing was run and the well was swabbed, but mud, gas and a trace of oil were the best that could be obtained. Fluid entered the hole very slowly, confirming the belief that the zone opened was not capable of furnishing a good volume of fluid.

General Petroleum Corporation suspended operations sev-

eral weeks ago in No. 1301, leaving the field without an active deep test. This well was drilled to 4399 feet and can not be called a conclusive test.

The Lost Hills field was considered as about an even bet that the Temblor formation would produce when found. Opinions differ as to the formations cut above and below 5000 feet, but it seems logical to assume that the Temblor has been reached. Lost Hills is farther out in the valley than either North Belridge or Kettleman Hills, but the base on which the more recent deposits were made is higher than either of the other fields.

San Miguelito Co-Discovery Well Is Being Re-Drilled

Ventura, Calif.—Continental Oil Company has redrilled from 6500 feet in Grubb 1, co-discovery well in the small San Miguelito field, about midway between the Ventura Avenue and Rincon fields, and is now coring in hard shale at 6700 feet. More zone will be opened before a production test is made. This well flowed at a commercial rate for a short time during the test of the 9⅝-inch water shut-off at 6472 feet, but bridged and showed water.

The new field is still a questionable factor and may not make a very consistent producer. The Ventura Avenue and Rincon field, both of which are in line with the new field, represent opposite extremes. Ventura Avenue is one of the best fieds in the state, while Rincon field, to the west, has been a very mediocre producer.

Chanslor-Canfield Midway Oil Company is producing Hobson A2 on the compressor at 7825 feet, after plugging back from 10,030 feet. This test may be regarded as one of the discovery wells of the field.

Tideland Permits Near Goleta Are Abandoned

Santa Barbara, Calif. — General Petroleum Corporation has abandoned two tideland permit tests near Goleta and on ocean strips which offset the company's holdings on the More ranch. They were Crandall 138-1, abandoned at 4931 feet, and Parker 139-1, a validation test which was abandoned at 2050 feet. The former was tested in the Vaqueros and Sespe formations, but produced only a small amount of gas and water. Abandonment of these two tests does not affect the status of the district, since the best showings have been found on the mainland leases. The company's More lease, Section 22-4-28, has produced gas in two wells, with More 3 now being plugged back from 6912 feet for further testing of the upper gas zone.

Ohio Oil Company is drilling at about 5800 feet in Oakley 1, a wildcat near Goleta which is being drilled in search of an extension of the gas field developed by General Petroleum Corporation. The outcome is doubtful.

Belridge Field Deep Test Likely Will Be Abandoned

Bakersfield, Calif.—General Petroleum Corporation will suspend operations in Berry 1, a deep test in the main Belridge field, if more encouraging showings are not found within the next 200 feet. The well is now being cored below 7200 feet, and no important showings have been found below the shallow zones. The desire to test the Temblor zone affected operations in several valley fields, and this test was a part of the extensive deepening program over the district. The Temblor formation was known to be of doubtful value farther to the south, but was a good gamble so close to the productive North Belridge field.

Activity in the North Belridge field has declined to a very low level; and no immediate resumption is in sight. Belridge Oil Company is drilling around 6800 feet in No. 64-27, a secret deep test; little is known of the formation. A formation tester was run, but the results were not conclusive.

Huntington Beach Deep Tests Disappointing to Operators

Huntington Beach, Calif.—The recent deep tests in the Huntington Beach field may not offer positive evidence that the lower formations will not prove productive, but they are convincing enough for the present time and operators who have been standing by to start at a favorable sign are now wondering just what to do.

Abandonment of the lower portion of Superior Oil Company's Eberle 1 at 9054 feet in favor of the 4400-foot zone eliminated one of the most interesting deep tests drilled in the Los Angeles basin. W. E. McCaslin has made no progress in Transport 17, which was drilled to 8365 feet and tested at various levels under several conditions. This well produced some oil, but a water shut-off was never effected.

Huntington Beach lies in line with Seal Beach, Long Beach, Dominguez, Athens, Potrero and Inglewood, but developments below 7000 feet at Seal Beach, the nearest field to the northwest, pointed to a questionable outcome below the same depth at Huntington Beach. Deep production north of the present deep tests in the field is possible but improbable. The field has several producing zones, starting with the 1600-foot tar zone and ending with the 4400-foot light oil zone.

Wildcatting Little Affected By Demand for Lighter Crudes

Los Angeles.—Wildcatting in the Los Angeles basin has not been affected by a better demand for light oil; but attempts to extend the settled fields will be made in some of the shallower districts.

East and west of the Torrance field and near the Montebello, Playa del Rey, Rosecrans, Dominguez and Huntington Beach tests will be concluded or started when conditions are further improved. The Torrance field covers an extensive area and the districts near Hermosa Beach and Wimington might prove productive on a small scale. Both areas are nothing more than extensions of the Torrance field. Resumption of scattered operations near the Rosecrans and Dominguez fields is expected, but the efforts of the past have been unsuccessful.

The Santa Fe Springs and Coyote districts are good for more wildcatting when the demand for oil is keen enough to divert funds toward such an undertaking.

Several million dollars have been spent in attempting to find new fields and extensions near the Montebello field, and other attempts are possible.

The extensive drilling in and near the old shallow Newport field is not taken seriously, but deeper production is possible.

Los Angeles.—Plugging back of several wells at Santa Fe Springs to recomplete in the Meyer zone is under way and a still greater shift to include this sand is expected. This zone has been the most dependable producer in the field and yields a high gravity sweet oil which is in keen demand.

New Mexico and Rocky Mountain Area

Northeastern Colorado District Records Interesting Showings

Denver, Colo.—More encouraging showings were reported last week in the northeastern Colorado territory after the work has been variously held up by different mishaps. The most interesting well was that drilled on what is called the Fort Morgan structure by Colorado Associated Oil Company. This test is bottomed in the Dakota sand and although it had not been entirely cleaned out at last report, it was making about 3,000,000 feet of gas through eight-inch casing. When the gas was first evident it was lighted and burned a 15-foot flame in the derrick; it was burned for five hours and then bailing was resumed. Swabbing was in progress at last report, with the gas showing an increase.

Reiter-Foster Oil Corporation's test on the Greasewood Flats structure, a half mile west of Continental Oil Company's Briggs 1, found water in the Muddy sand, and is now rigging up rotary to carry the test to the Dakota and Lakota. This is the first well on the Greasewood structure which has not found production in the Muddy, and it is to be watched with much interest now for its findings in the lower sands.

Fourteen miles south of Fort Morgan the test of Indian Territory Illuminating Oil Company has found the Muddy, Dakota, and Lakota all to be dry, and is now to continue to the Sundance.

On the Jackson Lake structure, six miles southeast of the discovery well on the Greasewood dome, Prairie Oil & Gas Company is making excellent progress in its test and reports that the well is running about 200 feet higher structurally than the discovery. It should be a completion within a short time.

Work has been started by Gordon Construction Company of Denver on the 16-mile oil pipe line for Continental Oil Company from the Greasewood field to Hardin on the Union Pacific. In time, if the production in the new district warrants it, the line is to be laid on into Continental Oil Company's refinery in Denver.

Water for drilling continues an unsolved problem. Ray Phebus of Thermopolis, Wyoming, has applied for a certificate of convenience and necessity to furnish electric power by which to operate the rigs in the field. Cities Service interests opposed the request before the Colorado Public Utilities Commission which is now considering the request.

Midwest Test of South Geary Dome Structure to Start Soon

Casper, Wyo.—As soon as the drill pipe being used at the well on the Fort Morgan structure, Southeastern Colorado, is released, Olson Drilling Company is to start work on the South Geary Dome test announced a week ago by Midwest Refining Company. The test has been standing for some months at 5340 feet while Midwest Refining Company and its affiliated companies carried on the exploration at Midway dome, 12 miles north of Casper. The South Geary well is to be carried into the third Wall Creek, and if it is not productive there, will be deepened to core the Muddy and perhaps the Dakota and Lakota.

It is definitely announced that Midwest Refining Company will drill the Middle Geary, sometimes called North Geary structure, but it is probable that the work will not be started until next spring. This structure, lying nine miles northeast of Casper, is believed by many to have the best chances for production of all three structures.

Drilling Progress Slow in Rattlesnake Discovery Well

Gallup, New Mexico.—Drilling progress is very slow in Continental Oil Company's Munoz 17, discovery well of the Delaware horizon in the Rattlesnake field, San Juan County, and several months have been required to carry the hole 100 feet below its former producing horizon at 6769-6771 feet. Late last week the cable tool crew were drilling on hard shell at 6890 feet in a 4¾-inch hole. This well uncovered the Delaware horizon in April, 1929, flowing 3500 barrels fluid, with 36 per cent oil, testing 38 gravity, and remained on production until a few months ago. The same company's Munoz 24 is making a try for this deep pay, and at last reports was standardizing at a total depth of 6066 feet.

Two Flowing Wells Added to East Side of Hobbs, New Mexico, Field

Hobbs, New Mexico.—Two flowing wells added to the east side of the Hobbs field near the townsite during the past week included one of the largest casinghead gas producers ever scored in the field. Continental Oil Company's State 4-A, lease "B," was given two-hour, open-flow test November 15 at total depth of 4051 feet and produced wet gas at rate of 138,500,000 cubic feet daily with 260 pounds back pressure on the casing. A separate test for oil production credited the well with flowing at rate of 266 barrels per hour, based on 45-minute, open-flow test in tanks. This well was given preliminary test November 12 and made 165 barrels oil per hour and gas at rate of 70,000,000 cubic feet daily but the separator was too small to handle the output. A larger unit was installed for the later gauge. The same company's State 5-A, a south offset to the above producer, logged brown lime at 2780 feet, and is drilling ahead below 2840 feet after having cemented 9⅝ inch casing, according to H. B. Hurley, district superintendent.

Gypsy Oil Company's W. D. Grimes (East) 1, located 1920 feet from the south and 860 feet from the east lines of Section 33-18s-38e, fell far short of equalling the performance of the above producer, although a direct offset to the east of same. Grimes 1 tested early last week in lime at 3975-4140 feet and was credited with making 55 barrels oil per hour through tubing and 80 barrels per hour open tubing and casing, with gas flow estimated at 9,500,000 cubic feet daily. Tubing was pulled, and the hole deepened to 4190 feet, resulting in the gas flow declining to about 3,800,000 cubic feet daily, and the oil flow through casing and tubing to 3013 barrels daily.

North and West Texas Field Notes

H. H. KING, ***Staff Representative, Fort Worth, Texas***

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Resumption of Drilling Scheduled On Deep Test in Schleicher County

San Angelo, Texas.—Resumption of drilling on Eastland Oil Company's projected deep test on a 10-section unitized wildcat block of leases in Schleicher County is scheduled for the current week with contracts signed for a 7000-foot test, or 150 feet in the Ellenberger lime. This test was originally started with eight unit members, and completed first contract early in September at 4510 feet. It is known as Joe Tisdale 1, located at center of Section 29, Block "M", GH&SA Ry. Survey. J. P. Williams, San Angelo contractor, has become a unit member, and has the contract for deepening the hole. J. P. (Jimmie) Chishold, head land department for Eastland Oil Company, has obtained the support of Atlantic Oil Producing Company, Phillips Petroleum Company and Humble Oil & Refining Company, all included in the original unit members, in carrying the test to the so-called Big Lake deep horizon. It is expected that drilling costs will average about $15 per foot in fulfilling the contract.

Penn Oil Company and Southwest Oil Production Company's J. B. Tubb 1, a semi-wildcat in western Crane County, is shut down to cement 8¼-inch pipe near the 3000-foot level and cut off water from upper horizon. This test has reached a depth of 4060 feet, with production expected within the next 100 feet.

Third Wichita County Test Is to Be Re-Conditioned

Wichita Falls, Texas.—Having failed to yield a commercial oil producer after logging 24 feet of oil saturated lime at 3875-3899 feet, Primrose Refining Company-Consolidated Oil Company et al's Munger 1 is moving in standard tools to re-condition the hole as a final step towards making this the third deep oil producer in Wichita County. The disappointing showing made by this deep test is believed to be partially due to the use of rotary equipment and heavy drilling fluid in penetrating the porous lime formation, which carries very little gas and apparently has a low reservoir pressure. Munger 1 is located about 1¼ miles southeast of the discovery well of the 3700-3900-foot lime horizon, known as the Strawn, and a commercial producer was needed to maintain interest in deep exploration work in the K-M-A area, which has yielded two small deep producers and two failures.

Archer County's so-called deep oil area at Chalk Hill also furnished a disappointment when Consolidated Oil Company-Primrose Refining Company-Deep Oil Development Company et al's L. F. Wilson 1, located in the SW Section 76, A. T. N. C. L. Survey, and about 1500 feet northeast of the discovery well of the 2200-foot Canyon lime horizon, logged dry sand at 2226-2228 feet. This test had drilled below 2265 feet late last week without showing oil, and was rated as a failure in the expected oil horizon.

The Chalk Hill pool has three flowing wells in the 2200-foot lime, all being rated above 500 barrels daily, or the largest producers in North Texas. Deep Oil Development Company and Lindsay Drilling Company's Wilson 1, Lease No. 1, Section 119, was completed early this month in lime at 2196-2212 feet, and when given a potential gauge last week flowed 520 barrels of 42.8 gravity (corrected) oil during 24-hour period through three-quarter-inch choke. It will be allowed to produce 45 per cent of this potential under proration.

Deep Oil Investment Company's L. F. Wilson 1, Lease 5-A, a north offset to the above new producer and a west offset to the discovery well, will not be carried to the 6500-foot level as originally planned, as result of having encountered sulphur water in the Ellenberger lime at 5745-50 feet, or about 200 feet in the latter formation. This well passed up a potential producer in the 2200-foot horizon in complying with lease obligation for a 5500-foot test, and bailed some oil at the 3600-foot horizon. It is reported that the owners of this deepest test in the county have turned same along with 10-acres of surrounding land to the Lindsay Drilling Company, and the latter will plug back and shoot the deep horizons. It is quite probable that a commercial producer will be made in plugging back to the 2200-foot horizon.

Check Being Made on Potential Production in Texas Panhandle

Pampa, Texas.—A check-up on the potential oil production in the Texas Panhandle is being made by the Texas Railroad Commission's representatives for proration purposes by taking a five-day, open-flow or pumping gauge on all wells except those classed as marginal wells. The combined estimated potential turned in by operators gives the district a rating of 120,000 barrels daily, but this is believed to be about 25 per cent too high. An accurate check is necessary to enforce the commission's recent order that is supposed to limit production to 55,000 barrels daily effective November 1. J. M. McDonald, Pampa, who is a deputy oil and gas supervisor, is also serving as umpire in charge of proration and a crew of oil gaugers have been hired by the state to make the potential tests.

During the past week the district averaged 61,000 barrels daily, or about 5000 barrels above the quota allotted. A more liberal production allowance for wells making considerable water and those falling within the marginal classification has been undertaken since the state took active charge of proration enforcement in the district, with the flush wells in Gray County placed on a smaller allowance.

Although more than a year has elapsed since Danciger Oil & Refining Company and Sunray Oil Company gained relief from proration rules of the commission through temporary court injunctions on their Panhandle properties, the court order is still being respected by the state conservation orders. Operators with offset wells to those of the above two concerns are allowed to produce an equal amount of oil daily, and because of these exceptions the district is due to yield above its allotted production quota.

Lone Star Gas Company is reported to have acquired Wischkamper et al's 520 acres of gas producing leases in the Shamrock field, Wheeler County, with seven gassers rated at a combined open flow of 250,000,000 cubic feet of gas daily for $50,000.

East Central Texas Field Notes

H. H. KING, ***Staff Representative, Fort Worth, Texas***

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Production Limit of East Texas Oil Field Extended to Eastward

Longview, Texas.—Irregular sand conditions encountered by wells trying for minor extensions to the productive limits of the East Texas field, account for an increase in the quota of small wells, and occasional failures after a long period of successful completions. An unexpected eastward bulge to the producing limits of the north portion of the field was scored last week when S. F. Smith, Palestine operator, and associates' J. C. Gray 1, located on 23-acre lease, near west center of the D. Sanches Survey, showed good for about 500 barrels daily from broken sand at 3601-3606 feet, with the hole bottomed in shale at 3634 feet. Lease storage has been installed to make a test of the production. This outpost is half mile east by north of two disappointing tests drilled recently by Columbia Oil & Gas Company and Arkansas Fuel Oil Company on the G. A. Castleberry land, although the latter company is going to make a small pumper from its Castleberry 2 as result of filling 500 feet of oil in the hole.

Two more failures were added to the northwest edge of the field on the Upshur County side during the past week. Eastland Oil Company's O. M. Victory 1, located in southwest corner of the E. A. J. Evans Survey, tested salt water in Woodbine at 3637-3659 feet, with a sub-sea total depth of 3312 feet. This failure is due north of Gladewater. Ty-Tex Oil & Development Company and W. B. Letts' S. F. Kay 1, located in northeast part of 50-acre lease, H. W. Augustine Survey, and northwest of Gladewater, also proved a failure in Woodbine at 3648-3669 feet, having a minus total depth of 3353 feet. Humble Oil & Refining Company's L. T. Mackey 1, located in southwest corner of 95-acre lease, S. Harrell Survey, and on a line between producers, remains idle after having swabbed dry from broken sand, shale at ash at 3636-3669 feet, or a minus total depth of 3328 feet.

The Texas Company's W. T. Chappell 1, located in the southwest corner of the company's 80-acre lease, W. A. Elliott Survey, and near the west flank of the Rusk County portion of the Kilgore area, is reported to have gone dead after swabbing and flowing 45 barrels of pipe line oil during first hour from regular sand at 3658-3660 feet. This well has a sub-sea total depth of 3307 feet, and was not carried the usual depth into the Woodbine because of danger of bottom hole water, else a much larger producer probably would have resulted. It is more than one-half mile from the west limits of the field.

Completion of a big producer near the original salt water area of the East Texas field during the past week by Sun Oil Company and C. P. Burton Drilling Company's A. A. King 1, which gauged 73 barrels of pipe line oil per hour flowing through three-quarter-inch choke on 2½-inch tubing at 3686 feet, exceeded expectations. This well is in the southeast corner of 100-acre lease, being on the east line of the Peter Holmes Survey, and is several locations due north of the first two water wells on the west flank of the Kilgore area. It was drilled to a sub-sea depth of 3309 feet, or four feet in the Woodbine. C. P. Burton Drilling Company's Florey 3, a south offset, was scheduled to be completed late last week from sand at 3684-3686 feet.

Introduction of taper tubing for flowing wells as a means of prolonging the gas pressure on the sand is being tried in Shell Petroleum Corporation's W. W. Elder 10, located in the southeast corner of 157-acre lease, J. S. Carruthers Survey, Kilgore area. This well logged 59 feet of sand and will be tested early in the week at a total depth of 3588 feet, with a tubing string consisting of 2403 feet of one-inch and 1151 feet of 1½-inch tubing set near the bottom. Previous completions in the area have registered large potentials flowing via 2½-inch tubing, and an accurate comparison on yield and pressures will be possible for the taper tubing equipped well.

Another pumping well for the Kilgore townsite area will result from poor sand conditions encountered by Humble Oil & Refining Company's Dora Thomas 1, which logged sandy-shale at 3551-3559 feet and top of Georgetown lime at 3653 feet. It was drilled to 3671 feet, and flowed 10 barrels per hour on first day, but then quit. This well is cased with 4⅞-inch pipe, which was cemented at 3511 feet, or the smallest that has ever been used by the above company in the field. However, the small casing idea is becoming popular with operators generally, especially on "east side" leases because of no danger of bottom hole water for some years hence.

An east extension to the productive limits of the Kilgore area in southern Gregg County is virtually assured by Simplex Oil Company's J. E. Lawther 1, located on a 35-acre lease, John Maffitt Survey, having logged broken oil sand at 3553-67 feet, with a surface elevation of 352 feet. This test was drilled to the top of the Georgetown lime at 3589 feet. Casing has been cemented at 3550 feet to complete in the above horizon. It is located about 3500 feet west of an old dry hole drilled by J. R. Tarvis et al on the Morton tract. On the opposite, or west flank of the field from the above outpost, Prairie Oil & Gas Company's H. J. Thomas 1, located in the northeast corner of the James M. Morris Survey, sustained a temporary blowout after missing an attempted core recovery at 3742-3751 feet. It is a frequent occurrence for drilling crews to fail to obtain recovery when coring the soft oil sand. Casing will be set on the Thomas test, and if a producer will give the field a maximum width of 3¾ miles in an east and west direction at this particular point. A dry hole was completed recently by Williams et al on the Chas. Smith tract, which is about one mile south by west of the above west flank test, after drilling to salt water at 3737-3746 feet, or a minus total depth of 3361 feet.

Tyler, Texas.—Production in the East Texas field had climbed back to 376,539 barrels daily at the start of the present week, a gain of 23,076 barrels since the well allowance was cut from 150 to 125 barrels daily nine days previous.

During this brief interval the field has added 161 wells, making a total of 3037. There were 18 of this number off production when the above compilation was made by military officers. The field produced 12,701,230 barrels during October, or almost 500,000 barrels more than the output in September, which was void of production during the first four days because of the military shut-down order.

East Texas Field Work Continued Decline

Tyler, Texas.—Operations in the East Texas field declined during the past week, making the fourth consecutive week that reductions have been made in drilling activity after reaching a peak of 886 operations on October 23. The latest check shows a total of 759 operations listed on field reports, or 20 less than the total one week previous. During the past week there were 90 new locations, and for the same period operators completed 129 wells, including 57 in the Longview area.

Companies that have heretofore been very active in drilling are steadily cutting down their volume, as will be noted by comparing the accompanying table with that published some few weeks ago. This table lists all operators having four or more operations underway, and serves to illustrate the fact that the big end of the activity is prorated among hundreds of companies and operators with only a few rigs running.

Operations East Texas Field

Most active companies operating in Gregg, Rusk, Upshur and Smith Counties, comprising the East Texas oil field, are listed below, with total operations held by each, exclusive of completions, as of November 13, 1931:

Company—	Lost-tions	Der-ricks & Rigs	Active Tests	Total Un-der-way
Humble Oil & Refining Co.....	2	32	20	54
Magnolia Petroleum Co.....	3	9	16	28
Arkansas Fuel Oil Co.....	5	8	9	22
Mid-Kansas Oil & Gas Co.....	5	6	7	18
Sinclair Oil & Gas Co.....	1	4	13	18
Tidal Oil Company	4	6	8	18
The Texas Company	1	5	11	17
Yount-Lee Oil Company	4	10	3	17
Gulf Prod. Co. et al	5	6	4	15
Atlantic Oil Prod. Co. et al.....	3	3	8	14
California Pet. Corp. of Ven.....	1	2	7	10
Shell Pet. Corp.	1	2	7	10
Stanolind-Simms Oil Co.	4	1	5	10
Stanolind O&G Co.	2	1	4	7
Sun Oil Company	2	3	4	9
Golding-Murchison Oil Co.....	.	4	5	9
H. L. Hunt et al	.	5	3	8
Amerada Petroleum Corp.	2	1	4	7
C. B. Bunte, Inc. et al.....	5	1	1	7
Empire Gas & Fuel Co.....	4	1	1	6
F-H-E Oil Company	3	.	3	6
Prairie Oil & Gas Co.....	.	1	4	5
Sabinas Oil Corp.	2	.	3	5
Cranfill-Reynolds Co. et al.....	1	2	1	4
Selby O&G Co.-Lewis Prod. Co...	.	1	3	4
Superior Oil Co.	.	3	1	4
Total for 26 companies	60	117	155	332
Miscellaneous companies	44	142	241	427
Total	104	259	396	759
Total previous week	124	241	414	779
Operations by Areas				
Longview	48	118	167	333
Joiner	22	70	167	218
Kilgore	36	21	101	208
Total	104	259	396	759

Wildcat Locates New Horizon Northwest of East Texas Area

Longview, Texas.—The Woodbine sand horizon yielded a new oil producing area in East Texas and about four miles north by west of the nearest production in the East Texas oil field on November 15, when Cranfill-Reynolds Company and associates' wildcat on the M. L. Thrash 106-acre lease, E. N. Eubanks Survey, showed for a commercial well on drill stem test taken at 3728 feet. Presence of dry holes to the northwest and southwest, with the east side of the potential oil area cut off sharply by a Georgetown lime high precludes any possibility of a major field following in the wake of this new strike. It is also definitely established that the well is on a separate type of structure than the big field to the south, as the former scored production at a sub-sea total depth of minus 3399 feet, at which level the big field yields salt water when the Woodbine is tapped. The gravity of the oil in the wildcat is reported at 34 degrees or about five degrees lower than the neighboring field.

A string of 6⅝-inch pipe has been cemented above the Woodbine in Rash 1, which is in the southeastern part of Upshur County, and plans are to drill plug and test late this week. The well filled 29 fourbles with oil and three with drilling mud when the drill stem was opened for 11 minutes. The fluid was reported to be free of salt water. Cranfill-Reynolds Company owns one-half interest in the well and approximately 3500 acres of leases in the immediate area, while Harry Reynolds, Houston, and Leon Russ, Dallas, have an undivided one-quarter interest each. The owners were reluctant to make a drill stem test after having failed to encounter the Woodbine sand above the water table in the field to the south. Major companies own a large percentage of the acreage adjoining the drilling block, although independents succeeded in obtaining checkerboard lease protection. A. R. McElreath, F. W. Suggett and L. B. "Pinkie" Herring, Fort Worth operators, have approximately 1050 acres of leases reasonably close to the well, having invested more than $25,000 for this protection when the lease play got underway.

Approximately 10 feet of Woodbine oil saturated sand is believed to have been drilled by Cranfill-Reynolds Company's wildcat producer, and almost without exception a pool or field follows when such a quantity of oil saturated sand in the Woodbine is uncovered in the general East Texas district. Rash 1 logged hard Pecan chalk at 2422 feet to 2965 feet, and Austin chalk at 3652 feet to 3700 feet, and a dry sand at 3710 to 3717. The production is believed to be coming from below the latter depth and the total depth of 3728 feet. The elevation is 329 feet.

The new Upshur County area will probably be named the Jamestown pool, as a town of such a name is located a short distance to the northeast.

Major companies have held protection leases surrounding the town for years, based on a geophysical high, with the axis of the structure located west of the town. Tests drilled to the east of this structure encountred no Woodbine, with conditions similar to those found on the east side of the big field.

Comparison of logs on tests drilled on the north edge of the main field and this wildcat prove conclusively that a syncline lies in between. The normal rate of dip of the key formations and Woodbine sand on the north end of the main field towards the Rash test would place the Woodbine considerably lower than the depth that showed oil on drill

stem test, and if interlocking sand prevailed it would carry salt water.

Dearmand et al's dry hole, located a short distance from production on the north end of the main field provides the geological control on the intermediate acreage. It is very probable that the blanket type of Woodbine sand will not prevail in the Jamestown area, and that production will be erratic because of lenticular sand conditions.

East Texas Contractors Being Converted into Oil Producers

Longview, Texas.—Conversion of drilling contractors into oil producers in great numbers is a natural development taking place in the East Texas field as the shrinkage in drilling activity becomes more pronounced each week. The stacking of contractors' rotaries involves more than the decline in field operations would indicate owing to the fact that many of the most aggressive companies, such as Humble Oil & Refining Company, Magnolia Petroleum Company, Sun Oil Company and others are restricting their volume of field work to less than the number of drilling rigs each has available. Since there are no other active rotary fields for the contractors to switch to it is up to them to create new work, and many are meeting with success by tieing up with under-financed lease owners in the development of small tracts on a partnership basis.

Stabilization of the East Texas crude market and price under military rule has made it possible for contractors and owners of undrilled leases in proven territory to join in making development deals of mutual advantage with a reasonable assurance of a profit for both parties. The plan is for the contractor to drill one or more wells for a working interest in the lease, and the most substantial rig owners are meeting with success in obtaining credit arrangements with supply dealers by posting a small cash payment upon delivery of needed equipment, then assign oil runs for the difference. A wide assortment of deals have been put over lately, with the lease owner in some instances supplying the physical equipment and the contractor furnishing the drilling equipment and labor.

Proration authorities on duty in the field estimate that there are approximately 900 undrilled tracts of less than 20 acres in area, and the bulk of these are owned by independents, or persons never before identified with the oil producing business. It is also estimated that there are more than 2300 units of 20-acres or more in area, including large leases sub-divided on paper into units, that have not been scratched with a drill. These figures reveal the opportunity that awaits a contractor with idle rigs and a reasonable amount of financial backing to join the ranks of producers in the field by lining up lease owners that can not develop their holdings without outside aid. Many of the small tracts are held by speculators that acquired protection when the field was in its early stages of development at nominal costs and during the time that there was more potential oil producing territory on the market than professional buyers.

The most popular well financing plan with drilling contractors and lease owners is for the former to drill, fully equip and place on production one or more wells for a fixed sum, which now ranges from $25,000 to $30,000 per well. The contractor receives an assignment on from one-quarter to eleven-sixteenths of the gross production yielded by such wells until fully reimbursed for the sum agreed upon, then when all indebtedness has been wiped out the lease owner reverts to the usual seven-eighths interest in the gross revenue, with the remainder going to royalty owners. The above turnkey well contract prices represent a substantial bonus for the contractor, who can drill and equip wells into tanks, barring mishaps, for an actual outlay of from $16,000 to $20,000 each.

Contractors conducting this type of financing are estimating that the proration allowance per well will range from 80 to 100 barrels daily, and that the price will range from $.75 to $1 per barrel, while the wells in carefully picked sections of the field will flow for two years the maximum allowed. A 100 per cent return on the investment is anticipated within two to four years, depending on size of oil assignment, as well as the price situation and performance of the well. Willingness on the part of the lease owner to assign a big portion of the production interest to contractor lowers the cost of the well.

Simms Oil Company recently completed a well that was drilled for an independent company, lacking development funds, and is reported to have contracted to drill four completed wells immediately for a group of individuals having that number of leases in the Castleberry and Sanches Surveys, Gregg County. The above company is to be reimbursed from one-quarter of the gross production of such wells, and is receiving a substantial bonus above the actual cost of same, while at the same time the lease owners are to receive wells that could not be financed otherwise.

F-H-E Oil Company, Fort Worth independent unit with extensive holdings in the East Texas field is reported to be negotiating for the drilling of a half dozen wells on a deferred payment plan for other lease owners, thereby enabling the company to keep its field organization intact during the winter months; otherwise a reduction in personnel would be necessary. This concern has its own rigs, and is winding up necessary development of controlled leases.

Small companies and operators are not alone in enlisting financial aid in getting wells drilled, as some of the large units have adopted the plan. Arkansas Fuel Oil Company, major lease owner in the Longview area, is paying $25,000 per well completed to the Christmas tree out of a portion of the production revenue from such wells on a 100-well contract made with the Consolidated Drilling Company, Shreveport. The details of this contract were published on page 62 of the October 2, 1931, issue of THE OIL WEEKLY. Ten completed wells per month is required of the contractor in this deal.

C. B. Bunte, Inc., Tyler, is reported to have made deal involving the drilling of five wells by Bud Miller and associates, who will be assigned a one-sixth working interest in the 101-acre A. S. Jarvis lease, Joiner area, with the former furnishing casing and tubing for the wells. One well has been completed on this lease by C. B. Bunte, Inc., and a financial arrangement was made for Miller et al to also share in its output.

East Texas Crude Stocks Are Less Than One-Third of Total Capacity

Tyler, Texas.—Crude stocks in the East Texas field and nearby counties amounted to less than one-third of the total capacity at the close of October, according to a survey compiled by production scouts. The district, including oil in storage in the Van field, had 3,040,700 barrels of high gravity oil on the above date, and total steel storage capacity was placed at 9,430,000 barrels. Withdrawal of stocks in the district has averaged above 15,000 barrels daily for some weeks.

South Texas Field Developments

EARL POST, ***Staff Representative, San Antonio, Texas***

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Schoolfield and O'Byrne Pool Records Two Wells in Past Week

San Antonio, Texas.—Two oil producers, one gasser and one well in process of completion sum up the entire activity in the Schoolfield and O'Byrne pool of Duval County. Duval Oil Corporation's Bishop Cattle Company 6, Survey 135, is flowing 550 barrels through three-eighths-inch choke. Two sands are logged at 2343-55 feet and 2388-97 feet. The 6⅝-inch casing is set at 2335 feet.

Humble Oil & Refining Company's White 2, Survey 58, was brought in several days ago for 200 barrels initial, but increased to better than 450 barrels daily. The sand is recorded at 2291-97 feet and 2323-37 feet, with 6⅝-inch casing set at 2289 feet.

Magnolia Petroleum Company's J. O. Wilson 6, most westerly well in the pool and between the southwest extension, where most of the recent activity has been recorded, and the main field, made a gasser. This well is located 330 feet from the east line of the lease and 2346 feet from the north line and is on Survey 136. The test had a sand at 2230-36 feet and set 8¼-inch casing at 2230 feet. A second string of 5¼-inch casing was set at 2248 feet; well has a total depth of 2272 feet. Initial production is 40,000,000 cubic feet.

In the S. R. C. pool, also in Duval County, S. R. & C. Oil Corporation and Vacuum Oil Company's Duval County Ranch Company 6 is in process of completion after setting casing on top of the sand at 1727 feet. The well is located in Survey 293.

In the Cole field, Cole Petroleum Company's Benavides 71, most easterly well in the field, located on Block 8, Survey 19, is bailing with the sand at 1747-57 feet.

Beck Salt Dome Test Offers Real Engineering Feature

San Antonio, Texas.—Houston Oil Company's Konrad 1, on the Beck Salt Dome, Victoria County, is offering a real engineering feature. Heaving shale encountered at around 5000 feet has held up drilling for nearly two months.

This well is located 1000 feet east of the northwest corner of the T&NO Survey and is north of Victoria.

A string of 8¼-inch casing was run to 4750 feet. At 5000 feet, the heaving shale was encountered and this formation has been giving trouble to the test's present total depth of 5215 feet. The 465 feet of open hole has been filled with cement and drilling will be resumed through this block.

The cement was pumped in through the drill stem after the bottom of the well was reached and the well will now be re-drilled for the distance it was cemented, leaving a solid wall of cement to hold back the heaving shale. If more of the shale is encountered the same operation will be carried out.

Drilling will be resumed as soon as all the old field is removed from the hole and new mud is pumped in. Clay from Saxet sand and Gravel Company's workings a few miles west of town will be used to provide the new mud.

Because of the saturations in the shale it is believed that an oil sand will be found immediately below it. The well will be carried to a depth of 6500 feet if necessary and if it fails to make a producer at a lower level a gas sand struck at 4850 feet will be developed.

Will Attempt to Prove Balcones Fault Field in Caldwell County

San Antonio, Texas.—Detroit-Texas Development Company (M. O. Rayor) will attempt to prove up the Balcones fault field discovered 2½ miles northeast of Luling in Caldwell County next summer. The test is Dunlap 2, located 200 feet southeast of the discovery on the Solomon Seal Survey.

The original test made a small producer after plugging back from the Edwards lime at 2511-15 feet to the Buda at 2480 feet. Casing was set at 2145 feet and the top of the chalk was recorded at 2092 feet.

Zapata County Continues Center Of Interest in Southwest Texas

San Antonio, Texas.—Zapata County continues to hold the center of interest for activity in Southwest Texas. During the past week several more new operations were reported.

Claggett et al's Cuellar 1, Block 6, Survey 31, Martinez pool, is rigging up; O. W. Killam's A. Bustamante 10, Block 11, Share 5, Comitas Grant, is rigging up; Lowe, Rogers et al's Benavides 3, Survey 11, Martinez pool, is rigging up; Shankle and Murray's Cuellar 2, Block 5, Survey 61, is rigging up; S. R. & C. Oil Corporation's Trevino 5-E, Muckelroy pool, is rigging up.

The above wells are operations reported during the past week and are exclusive of about one dozen more drilling at various levels in the fields and wildcat districts of the county.

Damac Pool Offset Test To Discovery Well Proves Dry

San Antonio, Texas.—The Damac pool, one mile southwest of the Pettus townsite, Bee County, received a shock when a test in the apparent center of the pool tested salt water and will be abandoned. H. H. Weinert and C. R. & M. Oil Corporation's George A. Ray 1, about midway between the Damac discovery well and the Buchanan and Lefevre extension, cored a sand at 3929-32 feet and a sandy shale to 3935 feet, where it tested salt water. All wells are in the John Williamson Survey. Offsetting this lease to the south and west, deals have been made during the past few weeks for some fancy figures and derricks are up for offset wells.

As a result of the failure in the Weinert test, interest now turns to Houston Oil Company's J. F. Portis 2, southwest offset to the Damac well, which is coring at 3900 feet. This well is in the A. Smalley Survey and has one salt water well on the lease, this being farther east.

The failure of the Weinert well throws an entirely new

light on this pool and indicates that there might be several structures here, rather than a single one. Further drilling will be necessary, however, to prove this theory.

C. R. & M. Oil Corporation has made a location on the Ray farm to the west of the Buchanan and Lefevre 100-acre lease, while J. M. Davis and associates have made a location offsetting the Buchanan and Lefevre well to the east on a 10-acre tract. Both of these wells likely will be drilled. The Texas Company is said to be preparing to drill on its Brammel lease, immediately north of the extension producer. W. L. Morgan et al', on the other hand, already have derrick up for their well on the Ray tract just south of the Weinert well, but is doubtful that operations will be carried further until more drilling is done by other operators in the field.

In the main Pettus field, United Production Company has reached 7106 feet and is coring its Ray 39. The well is in the T. Hanson Survey.

Carolina-Texas Pool Test, Webb County, Is Promising

San Antonio, Texas.—Usher Carson's Webster 5, Carolina-Texas pool, Webb County, is showing up for a good high gravity producer from a sand at 3026-50 feet. The well swabbed 100 barrels of 47 gravity oil on November 12, with 650 feet of mud in the hole, after a 4½-inch liner was set. The well is being cleaned out and will be completed within a day or so. It is 150 feet from the north and west lines of the northwest one-fourth of the southeast one-fourth of Survey 684.

O. W. Killam has three operations in Webb County. Location has been made for his Bruni 1 on Survey 445. Bruni 22, Survey 90, Arispe Grant, Cole field, is drilling at 2492 feet, while S. N. Johnson 1, Survey 1618, in the Reiser district, is drilling at 1930 feet.

San Antonio, Texas.—Stanolind Oil and Gas Company's Hoffman 1, wildcat, 4½ miles southwest of Ben Bolt, in Jim Wells County, has reached a depth of 6004 feet, where it is shut down for orders. The well is located on the Hoffman 7000-acre tract in the Trinidad grant.

San Antonio, Texas.—C. L. Witherspoon (Witherspoon Oil Company) has resumed development work in the Cooksey unitized block east of San Antonio, in Bexar County. He has completed his Ramzinzki 2 for five barrels from sandy shale at 1379-1415 feet, with total depth 1579 feet. He has made a location for Pollock 2 and is moving on. These wells are on the J. W. Rialls survey.

Matagorda County Wildcat Has Gas Show at 5475-5510 Feet

Houston.—United North and South Development Company's Stoddard 1, wildcat well located in the Buckeye townsite district of Matagorda County, recorded a showing of gas this week at 5475-5510 feet. At present the crew is engaged in fishing for two joints of drill stem at 5540 feet.

Harvey Smith's Boker 1, another Matagorda County wildcat, was drilling in gumbo and lime at 3275 feet November 17. This well is located in the Citrus Grove district of the J. V. Criswell Survey and is 1500 feet northwest of an old test drilled by Empire Gas & Fuel Company.

Hamill and Powers, drilling a semi-wildcat in the Markham district, reported having cored this week a sand showing oil at 3230 feet.

Test Near Wichita City Limits Now Shut Down

Wichita, Kansas.—Scroggins et al were shut down at 2657 feet at their Wall 1, CSE SW NE Section 4-28s-1e, just south of the city limits of Wichita. Top of the Kansas City lime series was encountered at 2550 feet and a hole full of water at 2595 to 2627 feet.

Continental Oil Company and Shell Petroleum Corporation recompleted their Blake 1, SW SE SE Section 23-23s-4w, with a gauge of 8,500,000 cubic feet of gas at 200 pounds rock pressure. Production is coming from the chat horizon at 3266 to 3323 feet. This well was originally completed for 9,000,000 cubic feet at a total depth of 3308 feet.

Continental Oil Company has a rig on the ground for its Waltermire 1, CNE NW Section 33-21n-1w, approximately midway between Newton and McPherson in the southeastern corner of McPherson County. Nearest production is in the Voshell pool which is situated about 10 miles to the northwest. Two dry holes have been drilled in the same township, the closest being five miles northeast. Marland Oil Company's Wilkening 1, CSW SW Section 9-21s-1w, was a dry hole at 3564 feet and Helmrick and Payne's Klassen 1, SEc NE NE Section 14-21s-1w, was abandoned at 3562 feet.

Well Outside Bethany Gas Tests Dry at 4630-94 Feet

Marshall, Texas.—United Production Corporation's Werner 11, D. B. Lewis Survey, a test outside the defined limits of the upper Trinity gas producing part of the Bethany gas field, in Panola County, Texas, tested dry at the level where the gas is usually found in the Trinity, last week and is drilling ahead. The test was made from 4630 to 4694 feet. Later the test was drilling at 4862 feet in lime and shale. This test topped the Washita at 2190 feet, topped anhydrites at 4150 feet and reached base of the latter at 4625 feet.

Test on Utopia Structure In Northern Montana, Abandoned

Great Falls, Mont.—The California Company has abandoned its test on the Utopia structure in Northern Montana, having been unable to complete the well because of the condition of the hole. Another test is to be drilled a mile to the north, and material and equipment for this are being moved in.

The California Company attempted to complete the first test for the account of Utopia Oil Company, which had drilled it to an interesting sand which gave all indications of commercial production. The hole was in bad shape and proved useless.

Payette, Idaho.—R. J. Berry and associates' test on the Crystal dome structure found sulphur water in the sand at 2050 feet, which reported such a large showing of natural gas in a test drilled on the structure a year ago. Company is drilling deeper and coring. Well is on Section 5-9n-4w, Idaho.

Frannie, Wyo.—Midwest Refining Company's recently completed well in the Frannie field, Northern Wyoming, made 500 barrels on the pump of 28 gravity crude from total depth of 3001 feet. It is located on the western flank of the structure, and is a mile southwest of the nearest producer. It is 400 feet lower on structure than other wells.

Gulf Coast Field Developments

JACK LOGAN, ***Staff Representative, Houston, Texas***

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Revised Estimates Place Daily Average of Gulf Coast Higher

Houston. — Increased field activities in the Texas and Louisiana Gulf Coasts during October were manifested in revised estimates of the American Petroleum Institute on daily average production from those districts for the month. There was an increase in October to 153,500 barrels per day for the Gulf Coast. This compares with a daily average of 149,950 barrels per day as the revised estimate for September, or a total increase for October of 110,050 barrels.

A survey of field operations shows that Texas Gulf Coast had a total of 92 active and shut down drilling operations October 31, as against 64 at the close of September. The number of rigs had increased from 11 to 14 at the end of the 30-day period, while the locations (bona fide locations) increased from eight to 21. These figures included wildcats as well as proven field operations. Louisiana Gulf Coast likewise showed a substantial increase in field activities.

If the arrival of cold weather continues to be delayed, the amount of field activity at this writing indicates a possibility that November's production and field activity in the Gulf Coast districts of Texas and Lousiana may even exceed that of October.

Drilling in Fort Bend County Records Substantial Increase

Houston.—Led by developments in its youngest field, Clear Lake, drilling in Fort Bend County, Texas Gulf Coast, has shown a substantial increase during the past week.

Cullen and West and Gulf Production Company's Lockwood-Sharp 2-A was completed last week at Clear Lake, some times referred to as Thompson dome, for an initial production of 3500 barrels, flowing from 5151 feet. Their Lockwood-Sharp 3-A on November 16 was nearing completion below 5100 feet after setting 6⅝-inch casing at about 5020 feet above a show of oil in sand and shale at 5025-5104 feet and another show in a brown, soft oil sand at 5104-14 feet.

Gulf Production Company, operating individually, has erected a derrick and drilled the rat hole for Myers 1, located 800 feet north of Lockwood-Sharp 2-A.

The jointly operated Lockwood-Sharp 4-A is a derrick, while J. H. P. Davis 1, another joint operation at Clear Lake, spudded early this week and has passed the 1600-foot mark. Davis 1 is located 900 feet east of the southwest corner of A. P. George 619-acre tract, in the R. Peebles Survey. Lockwood 2 is drilling in hard lime below 3898 feet.

Six wells have been completed in Clear Lake field to date, and on November 16 their total daily production was 4725 barrels. This production coming from five completions. Lockwood-Sharp 1-A and 2-A had a combined daily output of 2840 barrels, 1-A showing a pressure of 540 pounds and 2-A a pressure of 320 pounds. Lockwood 1 was producing 441 barrels on a three-eighths-inch choke, with 200 pounds pressure. This well is showing 15 per cent basic sediment and water. A. P. George 1 and 2 had on November 16 a combined yield of 1441 barrels, No. 1 being on a half-inch choke with 100 pounds pressure and No. 2 being on a 1⅝-inch choke with 370 pounds pressure. Lockwood 1-B, the remaining completion, was dead.

Abercrombie and Harrison were successful during the week in putting their Nash 15 at Nash dome on production for 1600 barrels at about 4485 feet. Three standard joints of 6⅝-inch screen were set on bottom, and the well, which is flowing 23 gravity oil, built up a pressure of 300 pounds on the half-inch choke shortly after completion.

Another Fort Bend County completion was Moore 30 of Gulf Production Company at Moore's field. The initial on Moore 30 was 30 barrels per hour, or about 700 barrels per day of 27.4 gravity oil. One joint of 4½-inch screen was set on bottom.

At latest reports, Stone and Wyman's wildcat, located between Long Point and Damon, was in gumbo and lime just above 1300 feet. This well is known as Beard 1.

In the older fields of the county, Gulf Production Company has staked a location for Davis 62 at Big Creek, and Coronado Oil Company has built a derrick for Blakeley 2 at Blue Ridge.

New Gas Field Anticipated In Coastal Louisiana Area

Houston.—What has possibilities of developing into a new gas field in the Louisiana Gulf Coast was brought to light this week with discovery of gas-bearing sand in United Gas Public Service Corporation's wildcat in Terrebonne Parish.

Minor 2 cored a sand at 3878-82 feet which on a drill stem test produced an estimated two million cubic feet of gas. The operators are preparing to set 10-inch casing on the first shoulder above the 3878-foot depth with the idea of coring ahead and determining the thickness of the sand. The large size casing at this depth is being used to eliminate a possibility of the well's getting out of control in the event the sand develops pressure with depth and penetration.

United Gas Public Service Corporation's Minor 2 is located in Section 3, Township 18 south, Range 16 east, and the well is 3480 feet south and 1980 feet east of the northwest corner of the section.

Territory in which Minor 2 is being drilled is strictly wildcat, the nearest gas production being that of the old Houma gas field which lies 13 miles southeast of the well. The nearest known salt dome to Minor 2 is Four Isle Bayou, which is 10 miles south.

Completion at Pierce Junction Is Good for 500 Barrels Daily

Houston.—Rio Bravo Oil Company's Settegast 22-A at Pierce Junction, temporarily shut in late in July after having tested 800 pounds of dry gas at 4186 feet, was drilled deeper to 4300 feet and completed for 500 barrels of pipe line oil this week. The oil is coming through 1½-inch choke.

Two other wells at Pierce Junction have recorded showings of oil and are due for completion soon. Gulf Pro-

duction Company's Taylor 33, an attempt to slightly extend the producing limits of Pierce Junction field, has set two joints of 6⅝-inch screen on bottom of a full string of six-inch casing after having run into an oil sand at about 3820 feet. Tilton et al's Barnes 1 also reported a showing of oil in sand and shale cored at 3805-65 feet. It is being drilled deeper, with a total depth at this writing of 3930 feet.

Another Harris County project which attracted attention during the past week was Humble Oil & Refining Company's Erwin 2 at Mykawa, which in the last issue of THE OIL WEEKLY was reported as preparing to abandon at 6460 feet. This well is trying to blow out, with 900 pounds pressure being carried on the pump. The bottom was cemented, and the present depth of the hole is 6400 feet.

Another New Sand Found at 3480 Feet at Barbers Hill

Houston.—Barbers Hill field in Chambers County of the Texas Gulf Coast has always been kind to oil scouts; it is generally good for one or two paragraphs in each weekly letter. This week they will be writing "home" about the sand tapped on the inner portion of the northeast flank of Barbers Hill by Nat Hunter Producing Company's Tarbutton 2.

Tarbutton 2 tapped a sand and shale formation at about 3480 feet which continued to look good down to 3506 feet, where the hole was bottomed. The initial production on the well was estimated to be between 800 and 900 barrels of 24 gravity oil. Pressure on the open line (no choke was used) ranged from zero to 50 pounds from the newly discovered horizon, which, by the way, is about 1000 feet above what would normally be expected to be the Miocene-Oligocene contact in that part of the field.

Tarbutton 2 is located near the eastern end of the north half of the Ada J. Dutton strip No. 6, in the H. Griffith league.

Three other recent completions at Barbers Hill brought the week's total initial up to better than 4000 barrels. Sinclair Oil & Gas Company's J. F. Wilburn 8 yielded a flush of 1400 barrels of 25 gravity oil from 4495 feet after setting about three joints of 6⅝-inch screen. Sun Oil Company's O. H. Winfree 2, an east offset to Sinclair Oil & Gas Company's Smith 3, was finally put on the pump for 25 barrels at 5360 feet. Nat Hunter Production Company's Kirby H-8, one of the wells taken over from Humphreys Corporation, was completed for 1850 barrels of 25 gravity oil at 4395 feet. This well carried a pressure of 270 pounds on a five-eighths-inch choke at time of completion.

Another Completion Recorded On Cade Lease, High Island

Houston.—Yount-Lee Oil Company obtained another producer on the Cade lease at High Island field, Galveston County, this week when Cade 22 was completed at 5190 feet for an initial production estimated at 400 barrels, 15 per cent basic sediment and water. Cade 22, being produced through nearly 60 feet of five-inch screen, has a pressure of 400 pounds on the inch choke.

Cade 23, being drilled by the same operators, has reached a depth of 4421 feet and should be due for completion before early December.

High Island properties being developed by Yount-Lee Oil Corporation were taken over from Gulf Production Company.

Fire Destroys Rig of Test In Monroe County, Mississippi

Jackson, Mississippi.—The rig at P. J. McAlpine's Cowart 1, Section 2-12s-19w, a wildcat in Monroe County, northeast Mississippi, was destroyed by fire last week. The fire started from a forge at the test. It is likely that this test will be abandoned at the depth attained before the fire, total depth being 3793 feet in lime rock. Five and three-sixteenths inch casing was cemented at 3420 feet.

Gilmore and associates' Scott 1, a wildcat in Chester County, southwest Tennessee, which recently was spudded in with cable tools for a 15½-inch hole, was reported drilling a sand late last week at 490 feet.

El Dorado, Arkansas.—H. H. Cross Company recently bought 50,000 barrels of heavy Smackover crude from The Texas Company, to be delivered at the rate of 1400 barrels daily. A premium of five cents per barrel above the posted price for Smackover heavy was paid, it is reported.

Meridian, Mississippi.—Gulf Refining Company, November 16, topped the Tuscaloosa red beds at 4115 feet and were reported later drilling in this formation at 4021 feet in Long-Bell Lumber Company 1, SW SW Section 10-2n-16e, Clarke County, Mississippi. Elevation is 380.3 feet. This formation was encountered 60 feet higher than it was topped in the same company's Box 1, NW SE Section 11-2n-15e in the same county. Long-Bell Lumber Company 1 showed considerable heavy oil when tested at total depth of 3700 feet with eight feet of sand in the Tombigbee series in the upper Eutaw formation.

Development of "57" Zone at Ventura Fails to Materialize

Ventura, Calif.—Rumors of extensive development of the "Fifty-Seven" zone at Ventura Avenue failed to materialize and the field now has fewer active tests than at any time for several years.

Associated Oil Company has completed several average producers during the past two months and has reduced its number of drilling wells to four, three of which are below 7000 feet. Shell Oil Company is deepening only one well, with Bolsa Chica Oil Corporation active in one well at 4800 feet.

The deepest well was Associated Oil Company's Lloyd 57, a 5200-barrel producer at 8823 feet. This completion showed the possibilities of even deeper drilling, but there has been no need for further exploration.

The field has the thickest known Pliocene deposits, the deepest well yet drilled having started and stopped in this formation.

Shell Oil Company completed several wells above 5000 feet and in a zone which was regarded with disfavor for some time.

Belle Fourche, S. D.—A group of Pittsburgh and New York capitalists is back of a group of wildcat tests now under way in Southeastern Montana, Northwestern South Dakota, and Northeastern Wyoming. The group is represented locally by J. H. Voorhees, local consulting geologist, who reports that the test on the Oak Creek structure, in Wyoming, is drilling again after a short shut-down below 1585 feet, and that he believes it is now only about 60 feet above the Minnelusa formation, which is its first objective.

Louisiana--Arkansas Field Notes

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Shallowest Zwolle Completion Recorded at 2067-Foot Level

Shreveport.—Zwolle's shallowest oil producer was completed during the last week when Dengail Oil and Gas Company's Nulton 2, SW NW NE Section 1-7-13, Sabine Parish, was completed in four feet of marl at total depth of 2067 feet, flowing an estimated 200 barrels of oil daily through a one-sixteenth-inch choke, with 100 pounds back pressure. Six-inch casing was cemented at top of the marl at 2063 feet. The well started making heads while casing was being bailed and later settled down to a steady flow.

This well is the seventh producer in seven completions in this one-mile southwest extension of the Zwolle townsite part of the field. This offshoot has been the most consistent in producing in the entire Zwolle area.

Late last week there were six tests in and around Zwolle waiting for standard rigs, four actively drilling, one rig, two derricks, 12 shut down, most of them on account of lack of water for drilling, and seven new locations announced.

The new locations are: Crescent Drilling Company's McClanahan 1, SE NW Section 14-7-11; Pelican Natural Gas Company's Louisiana Long Leaf 11, NE NW Section 10-7-11; A. F. Tarver's Cutrer 2, NW NW Section 12-7-11; Ohio Oil Company's Bowman-Hicks 13, NE SE Section 35-8-12; Anderson and Smith's Hale 1, NW SW Section 1-7-13; and Lacy and associates' Holliday 1, SE NW Section 35-8-12; and Buvan 1, NW SW Section 11-7-11.

Besides the seven new locations in Zwolle, there were two others in North Louisiana last week, one in Richland Parish, United Gas Public Service Company's Sandidge 2, Section 11-20-4w, Morehouse Parish, and the same company's Rhymes-England 14, Section 32-17-6e, Richland Parish.

East Edge Zwolle Test, Once Abandoned, Being Standardized

Shreveport.—Trans-America Oil Company's Carter 1, SE NE Section 36-8-12, in the east Zwolle field, an east edge test, abandoned last April 8, as a dry hole at 2540 feet, is being standardized following the making of several heads of oil and a later bailing of the test. After several heads of oil were made, operators bailed more than 100 barrels of oil from the hole without lowering the fluid level below the 1700-foot level. In this respect it has followed behavior of several other tests in Zwolle, abandoned as dry holes that weeks or months later showed enough oil to make good pumpers. The production is coming from chalk rock.

Loring Oil Company is reaming preparatory to setting a string of 9⅝-inch casing at 3950 feet in Bowman-Hicks 18, Section 15-7-12, which may be made a 6000-foot test for the Zwolle field; total depth is 4174 feet.

Well Three Miles West of Urbana Area Drilling Ahead

Shreveport.—Modisette and associates' Webb 1, NW SE Section 3-18-13, Union County, Arkansas, three miles west of the Urbana producing field, which tested 1,000,000 feet of gas through drill stem recently from 2503 to 2532 feet, tested 20 fourbles of salt water from 2636 to 2645 feet last week, and later was reported drilling ahead at 2780 feet.

Lion Oil Refining Company and associates continued last week to drill ahead in pure rock salt in Guy P. Hayes A-9, NE NE Section 4-16-15, Union County, Smackover's first deep test. Late last week the bit was still in this formation at 6480 feet. Rock salt was topped at 5967 feet; elevation is 96 feet.

Ozark Natural Gas Company has cemented 6⅝-inch casing at 1885 feet in Hammonds 1, SE SE Section 29-10-29, Crawford County, Northwest Arkansas, and late last week the test was drilling ahead at 2004 feet.

Wild Gasser in Jackson Field Finally Controlled

Jackson, Miss.—After running wild for over 24 hours, J. E. Grandstaff and associates' East 1, Section 12-5-1e, Rankin County, in the heart of the southeast part of the Jackson gas field, was brought under control late last week. This test got out from under control while being bailed at total depth of 2382 feet in top of the Midway chalk and blew wild making an estimated daily yield of 35,000,000 to 40,000,000 feet of gas, endangering operations at nearby rigs. Finally, by use of a boiler at a nearby rig the drill stem was eased to bottom of the hole and heavy mud pumped in, killing the flow. This test topped Midway black shale at 2273 feet and 6⅝-inch casing was cemented at 2371 feet.

One new gasser was successfully completed in Jackson field last week, Baker, Owen and associates' Casey 1, NW SW Section 12-5-1e, Rankin County, estimated at 35,000,000 cubic feet daily. Black shale was topped at 2317 feet, and chalk at 2378 feet, with total depth of 2385 feet. Elevation is 262 feet (estimated). No new locations were announced.

Mississippi Power and Light Company is conducting a series of tests and analyses of gas from several of Love Petroleum Company's wells at Jackson. The reason for the tests has not been announced. Several gassers in the Jackson field have shown very small amounts of oil along with the gas. The oil smells like distillate or kerosene.

Hightower and Golson are arranging to abandon Fleming 1, Section 20-13n-3e, Chickashaw County, North Mississippi, a cable tool job. Total depth was 1640 feet. This is one of the oldest tests in Mississippi, antedating the discovery of the Jackson gas field.

Future Activity in Clarke County Area Is Expected

Meridian, Miss.—While no new locations have been announced in East Central Mississippi or West Alabama as a result of the oil shows in eight feet of sand in the upper Eutaw from 3692 to 3700 feet, in Gulf Refining Company's Long-Bell Lumber Company A-1, SW SW Section 10-2n-16e, Clarke County, the great amount of interest shown by oil operators in the test, has led to predictions that a future play is in store for the areas adjacent to the Hatchitigbee Anticline in West Alabama and East Mississippi.

Meanwhile the progress of the Long-Bell Lumber Company A-1, which is being deepened to the Tuscaloosa, whose sand series should be encountered around 4450 feet, is being closely watched. Late last week the bit was in gray and green sandy shale at 3942 feet; elevation is 380.2 feet.

INTERNATIONAL PETROLEUM
IN REVIEW

ROY E. LEIGH, *Foreign Editor, New York*

Kessler Calls Turn On Soviet Exports

New York.—In an interview published in a recent issue of The Petroleum Times of London, R. N. Fridman, chairman of the board of directors of Russian Oil Products, Ltd., Soviet distributing agency in Great Britain, is quoted as having said among other things that, "as regards the near future, Soviet organizations and Soviet production are ready to export considerably larger quantities; we expect shortly to be able to export say 8,000,000 tons (approximately 60,000,000 barrels) per annum. . . .

"In our fields of production and refining we have so materially advanced of recent years that the large quantities of petroleum products available for export are a natural consequence of these activities; . . .

"I sometimes see . . . that Russia is accused of dumping its oil products on the world's markets, but those who are making such statements cannot seriously contend that this is so, and nobody can say that Russia is not within its rights in exporting oil products for which it has not sufficient use at home."

J. B. Aug. Kessler, managing director of Royal Dutch Company, made spirited reply in the next subsequent issue of the same journal, in which he said:

"I do not think it is of much use to discuss whether or not Russia is within its rights, as, under the present regime, Russia does not seem to be very much concerned with what is or is not within its rights. But in connection with Mr. Fridman's reference to 'oil products for which there is not sufficient use at home,' I want to draw your attention to Bulletin No. 239 of the 'Oost Europ. Pers Informatie Agentschap' (East European Press Agency), according to which the chairman of the (Soviet) economic council has issued instructions for the consumption of oil products in Russia to be reduced by 30 per cent, because of a shortage in production.

"From this it will be seen that with a production, which, according to the Soviets' own statistics, lags far behind their plan, the Russian consumer has got to restrict his needs in order to enable the Soviet oil authorities to continue the disturbing effect of Russian oil on the world's markets. . . ."

British Oil Tariff Proposed

New York.—"It is an open secret," says The Petroleum Times of London, "that some of the members of the government view with distinct favor the erection of a tariff wall against imported refined oils, not merely from the viewpoint of the additional finance it would bring to the exchequer, but by reason of the impetus it would give to this country's young industry of oil refining, and especially of assisting the Scottish shale-oil industry in its present parlous position.

"With the return to power of a national government for the United Kingdom pledged to the important principle of protective tariffs on those imports which it will consider should bear such tariff with a view to the encouragement of home industries, the interesting question arises as to whether petroleum products will fall within the government's circle of action.

"There are several prominent persons in this country's oil trade who have a premonition that such will eventually be the case, and the argument is put forward that inasmuch as the late chancellor of the exchequer put an additional excise tax upon imported motor spirit as part of the policy of balancing the budget, the eyes of the new government will go a stage further and focus attention to the position of oil refining in this country. . . .

"Time was when our oil-refining industry at home was showing signs of considerable prosperity, but with the arrival of very cheap imported refined products, the profitable side of home oil refining disappeared. . . .

"It will be seen . . . that during the present year our refineries are only running to about one-third their total capacities, with the consequence that large additional numbers of refinery workers are out of employment and have had no alternative but to place themselves on the dole.

"The imposition of a protective tariff on this country's imports of refined oil products would, it is pointed out, be highly important in its operation in two directions, for while it would find employment for large numbers of refinery hands who are now out of work, it would also materially reduce the substantial sums which today are pouring out of the country in order to pay for the imported refined petroleum products.

"Encouragement would also be given to the erection of new oil-refining units in various parts of the country with the consequent employment of workers in their construction and the demand for engineering equipment, some of which would naturally be manufactured in this country."

Peruvian Petroleum Law Amended

Lima, Peru.—The Peruvian petroleum law has been amended by action of the provisional government, extending the time allowed for exploration. The amended paragraph now reads as follows:

"The term of exploration of petroleum concessions shall be two to four years, extendable two to four years longer, according to conditions thought desirable by the executive authority after consultation with the council on mining and petroleum."

Roumanian Exports To Increase

Bucharest, Roumania.—The Roumanian Ministry of Commerce has announced that negotiations are under way with Spain and France to increase exports of petroleum and petroleum products to those countries.

CORRECTION

Our attention has been called to an error which appeared in an article on page 82 of THE OIL WEEKLY, issue of November 6, 1931, entitled: "Second Roumanian Cargo of Gasoline Enroute U. S." In the third paragraph, the article said "at $2.15 per ton, which is equivalent to 59 cents per U. S. Gallon." This should have been .59 cents, a typographical error.

▼ INTERNATIONAL PETROLEUM IN REVIEW ▼

Dutch-Shell Passes Interim Dividend New York.—Dispatches from Europe indicate that Royal Dutch Company and Shell Transport and Trading Company, Ltd., will pay no interim dividends this year, presumably on account of the decline of sterling exchange. It is stated that the group has on hand a cash balance of £20,000,000 in British currency and $50,000,000 in U. S. currency. If this former figure correctly reflects the sterling balances which the companies had on hand when Great Britain abandoned the gold standard, it means that their losses on this score have approximated $21,000,000.

Details from Quirequire Field New York.—A report by the local technical inspector of hydrocarbons at Maturin concerning operations of Standard Oil Company of Venezuela during the month of July, 1931,—the latest official figures available in this country,—affords interesting details regarding progress in the development of the Quirequire field, in eastern Venezuela. That Quirequire is a field of prime importance is a matter of general knowledge; but the official report above referred to contains details which make possible a more definite gauging of the potentialities of the new field.

Well No. 14, for example, stands out conspicuously with an average production of approximately 1000 barrels per day of oil of 21.6° A. P. I. gravity, which is 5½ degrees higher than the average of the field. This is not a bad record, when one considers that the well was operated through a 7/16-inch choke.

Wells 39 and 43 rank as producers of the same calibre, with averages exceeding 1300 barrels per day, each, through larger openings. No. 43 is in the same gravity classification as No. 14, but No. 39 is a producer of low-gravity oil.

There are three wells in the 1000-barrel class and seven in the 500-barrel category,—all flowing through small chokes and all doubtless capable of much greater output. It is obvious from a casual study of this report that the potential capacity of the field is much greater than the average of 7419 barrels per day herein indicated.

Approximately 4000 acres have been proven to be productive, with the prospect that the ultimate limits of the field will be much greater.

Another tabulation included in the inspector's report indicates that wells in operation averaged 23 per day, and that the output per well averaged 329 barrels daily. Eighteen of these wells produced 29,728,000 cubic feet of gas, with a gas-oil ratio of 153 to one.

The only discouraging feature of the report is found in a record of oil moved from the field to the sea-loading terminal at Caripito containing from six per cent to 10 per cent of water and sediment, it appearing that the average is about eight per cent.

A record of shipments and stocks indicates that a total of 36,134.75 metric tons (approximately 237,566 barrels) were shipped away to New York, reducing stocks on hand to approximately 154,672 barrels as of August 1.

A small refining plant is being erected for the production of gasoline and fuel oil.

Details of Quirequire Field

Well No.	Production to Date: June 30	Production to Date: July 31	July Production	Number of Days on Production	A.P.I. Gravity	Daily Average Production	
1	78,151	78,151	.....	..	...	....	Closed. To be deepened.
2	65,182	67,272	2,090	31	15.9	67.4	¼-in. choke.
3	256,999	273,675	16,676	31	15.4	538.0	½-in. choke until the seventeenth; 9/16-in. choke thereafter.
4	57,840	61,390	3,550	29	15.5	122.4	5/8-in. choke on the first; 11/16-in. on the second; 3-in. thereafter.
5	17,536	17,536	.....	..	...	....	Closed. To be deepened.
6	.....	.....	.....	..	...	....	Temporarily abandoned.
7	80,813	84,248	3,435	31	17.2	110.8	¼-in. choke.
8	203,589	223,144	19,555	30	16.8	651.8	½-in. choke.
9	44,560	46,633	2,073	31	13.2	66.9	3/8-in. choke.
10	37,013	39,147	2,134	31	17.0	68.8	7/32-in. choke.
11	2,952	2,952	.....	..	...	....	Closed. Without pipe line.
12	41,238	41,238	.....	..	...	....	Closed. Needs to be cleaned out.
13	233,154	247,239	14,085	23	15.7	612.4	½-in. choke until the twentieth; 9/16-in. choke thereafter.
14	128,491	138,422	9,931	10	21.6	993.1	7/16-in. choke.
15	5,155	5,155	.....	..	...	....	Closed. Without pipe line.
16	.....	.....	.....	..	...	....	Temporarily abandoned.
17	26,304	26,477	173	4	15.8	43.2	Dead. ¼-in. choke until the seventeenth; 9/16-in. choke thereafter.
18	85,573	91,360	5,787	25	14.8	231.5	3/8-in. choke until the eighth; 7/16-in. thereafter.
19	15,325	15,325	.....	..	...	....	Closed. Little production.
20	27,026	29,251	2,225	12	15.6	185.4	3/8-in. choke.
21	140,510	158,195	17,685	31	16.9	570.5	7/16-in. choke.
22	59,411	61,001	1,590	31	17.3	51.3	¼-in. choke.
23	26,335	26,335	.....	..	...	....	Closed. Dead.
24	45,129	45,271	142	1	14.7	142.0	Dead. 3/8-in. choke. Closed since the second.
25	22,502	24,491	1,989	17	14.2	117.0	3/8-in. choke.
26	133,976	147,289	13,313	31	16.2	429.5	7/16-in. choke.
27	86,347	93,348	7,001	31	16.3	225.8	7/16-in. choke.
28	179,989	205,152	25,163	31	15.8	811.7	½-in. choke.
29	134,312	143,832	9,520	31	16.1	307.0	3/8-in. choke.
30	57,798	60,841	3,043	25	15.6	121.8	5/8-in. choke.
31	14,856	18,476	3,620	31	15.9	116.8	3/8-in. choke.
32	60,703	66,575	5,872	25	15.4	234.9	3/8-in. choke.
33	27,847	34,661	6,814	31	16.0	220.0	3/8-in. choke.
37	29,591	29,591	.....	..	...	....	Closed. Dead.
38	.....	.....	.....	..	...	....	Definitely abandoned.
39	23,060	31,061	8,001	6	16.4	1,333.5	5/8-in. choke.
43	313	5,754	5,441	4	22.1	1,360.0	5/8-in. choke.
56	97,046	118,702	21,656	31	17.7	698.5	7/16-in. choke until the sixteenth; ½-in. thereafter.
57	34,200	41,069	6,869	31	17.0	221.5	¼-in. choke.
58	13,699	24,248	10,549	19	19.3	602.5	3/8-in. choke.
59	1,126	1,126	.....	..	...	....	Closed. High gas-oil ratio.
70	715	715	.....	..	...	....	Closed.
71	3,860	3,860	.....	..	...	....	Closed.
T'tl	2,600,226	2,830,208	229,982				

Completions for Past Week in U. S. Fields

▼ ▼ ▼

CENTRAL EAST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
JOINER AREA—		
Arcadia Ref. Co., J. R. Green (55-ac) 2	8000	3777
Arkansas Fuel Oil Co., J. E. Wheelis (81-ac) 3	5000	3675
Aston Oil Co., J. R. Alford (11-ac) 1	7000	3732
M. D. Bryant et al, E. S. Thrash 1	7500	3800
E. L. Chapman et al, A. P. Finney (20-ac) 1-B	3500	3698
East Texas Ref. Co., J. Bell (29-ac) 2	6500	3708
Golding-Murchison Oil Co., M. L. Thompson (50-ac) 3	7000	3713
Gracey & Cronn, Thompson (14-ac) 1	8500	3674
Haynes Drilling Co., C. Lee (74-ac) 4	9000	3667
Humble O&R Co., John Bell (92-ac) 2	8000	3813
W. A. Mullikin (166.4-ac) 6	8300	3757
H. A. Piercy (90.66-ac) 2	9500	3765
J. E. B. Sneed (104-ac) 1	9500	3739
J. Thompson (80-ac) 2-A	9000	3700
Mattie Wooster (70-ac) 2	8000	3773
H. L. Hunt et al, R. W. Fair (211-ac) 5-C	9000	3634
Johnston & Rogers, C. W. Mullins (30-ac) 1	10,000	3800
Stanley Lewis & Suni, S. S. Cook (10-ac) 1	9000	3775
Lion Oil Ref. Co., H. Brooks 3-B	2500	3728
Magnolia Pet. Co., Dan Kelly (55-ac) 3	7500	3611
Jim Wright-Lossier (12-ac) 1	12,000	3720
Irion-Wright 11	8500	3704
Mid-Kansas O&G Co., C. L. Graham (134-ac) 2	7200	3655
J. F. Mason (116-ac) 1	7500	3657
Pugh-Hickman Drlg. Co., R. G. Wright 1	6500	3716
Nelson Puitt et al, Thompson (14-ac) 1	9400	3681
Sinclair O&G Co., A. S. Jarvis (116-ac) 8-B	10,000	3730
W. D. Kinney (132-ac) 14	8000	3624
W. D. Kinney (132-ac) 15	7700	3657
W. D. Kinney (121-ac) 16	8500	3663
Mayfield (374-ac) 6-A	8500	3785
Mayfield (149-ac) 7-B	4000	3630
J. R. Wright (10.14-ac) 1	7200	3723
Southern Interstate Co., Giles (14-ac) 2	4000	3714
Standard Pipe & Supply Co., J. Bell 2	7500	3789
Sun Oil Co., L. Cooper (28-ac) 1	4500	3669
O. W. Knight (264-ac) 5	7200	3674
The Texas Co., J. W. Turner (70-ac) 2	9400	3792
KILGORE AREA—		
J. S. Abercrombie-Harrison Oil Co., Cantrell 1	11,000	3647
Arkansas Drlg. Co. (was Burma Oil Co.) Alexander-Thornton 1	5500	3570
Atlantic Oil Prod. Co.-Byrd-Frost, Inc., M. B. Hughey (100-ac) 3	7800	3589
Devonian Oil Co.-Gulf Prod. Co., R. A. Motley 10	9000	3780
Empire Gas & Fuel Co., C. E. Christian (103-ac) 3	7400	3758
A. A. Lockhart (75-ac) 2	8000	3529
Gulf Prod. Co., Mary Charles (79-ac) 3	7500	3649
W. Florence (147-ac) 2	7200	3661
Houston Oil Co. et al, E. Thompson (39-ac) 4	8400	3686
Humble O&R Co., W. P. Moore (57-ac) 1-B	4000	3735
H. Sexton (100-ac) 4-A	8500	3713
Dora Thomas (57-ac) 1	250	3671
Magnolia Pet. Co., Ben Laird (82½-ac) 5	10,000	3589
Prairie O&G Co., W. B. Walker (80-ac) 3	6000	3697

For Tabulation and Comparison See Market Section

Company, Well and Location	Initial Production Bbls.	Depth
Roberts & Roscoe, C. E. Christian (23¼-ac) 2	6000	3680
Prairie O&G Co., W. B. Walker (80-ac) 4	8800	3704
Shell Pet. Corp., P. M. Bates (65-ac) 3	10,000	3619
W. D. Lacey (164-ac) 2	3000	3643
H. T. Neal 2	8000	3609
E. L. Smith Oil Co., M. J. Register (29-ac) 1	9500	3647
Snowden & McSweeney Co., R. H. Laird (133-ac) 7	10,000	3604
Stanolind O&G Co., J. R. Beall (83-ac) 5	7500	3666
M. E. King (50-ac) 3	7200	3772
J. S. Powers (100-ac) 3	9000	3732
N. Radford (19-ac) 1	6500	3589
Sun Oil Co., J. R. Beall (180-ac) 8	11,000	3629
M. T. Cole (257-ac) 1	9500	3542
Sun-C. P. Burton Drlg. Co., A. A. King (100-ac) 1	8700	3686
The Texas Co., W. T. Chappell (80-ac) 1	1000	3660
J. M. Dickson (88.4-ac) 3	9600	3604
Tidal Oil Co., M. G. Barton (193-ac) 4	8000	3616
Nat Bean 6	7500	3630
Vise et al, A. O. Brown (¾-ac) 1	9000	3657
Walton & Turbeville, C. E. Christian (26-ac) 1	4500	3652
LONGVIEW AREA—		
Arkansas Fuel Oil Co., L. Y. Tuttle (61-ac) 1	11,000	3624
B. J. Adrian-McCrary (60-ac) 2	10,000	3533
M. D. Allison (62-ac) 2	9600	3625
J. A. Whittaker (75-ac) 4	12,000	3557
Atlantic Oil Prod. Co., E. Burnside (204-ac) 3	9500	3557
M. H. Moyers (128-ac) 2	8000	3638
Bishop Corp., E. G. Richey (25-ac) 1	12,000	3590
Brannon et al, W. A. Norton 1	†	3519
California Pet. Corp. of Ven., A. J. Deering (70-ac) 4	8300	3711
Columbia O&G Co., J. B. Doby (42-ac) 1-A	9000	3569
Cranfill-Reynolds Co., S. S. Barton (46-ac) 2	7500	3698
Deep Rock Oil Co., B. Jones (61-ac) 2	12,000	3553
Eastland Oil Co., O. M. Victory (25-ac) 1	*	3659
Empire Gas & Fuel Co., J. W. Akin (100-ac) 2	10,500	3633
J. T. Jeter 1	8000	3601
Fain-McGaha Oil Corp., C. C. Clements (50-ac) 4	12,000	3621
J. C. Falvey et al, B. E. Rodden (5-ac) 1	8200	3540
F-H-E Oil Co., J. E. Christian (33-ac) 1	12,000	3652
Galvez Oil Corp., Mrs. M. O. Sheppard (36-ac) 2	8000	3558
Humble O&R Co., J. K. Edwards (281-ac) 8	7800	3665
Della Johnston (57½-ac) 3-B	7500	3635
J. Phillips (75-ac) 1	9200	3659
J. Phillips (75-ac) 2	4000	3688
G. W. Willingham (50-ac) 3	2500	3661
Macmillan et al, G. Jones (50-ac) 1	10,000	3591
Magnolia Pet. Co., R. A. Adkins (100-ac) 4	5500	3719
Sam Carr (100-ac) 3	15,000	3447
J. W. Free 13	9500	3711
T. W. Tuttle (48-ac) 1	12,000	3590
T. W. Tuttle (48-ac) 2	9000	3618
Premier Oil Corp., J. T. Jeter (Blk 58) 1	9200	3698
Primrose Pet. Co.-Pennworth Oil Prod. Co., Blackstone (10-ac)2	8200	3609
Roeser-Pendleton, Inc., B. Rodden (32-ac) 4	8500	3543
Rowan-Nichols Oil Co., W. T. Todd 2-B	10,000	3630
Sakaba Oil Corp., Hickman-Baird 2	2500	3616
Shasta Oil Co., T. D. Campbell 1	11,000	3626
Shell Pet. Corp., W. T. Burnside (160-ac) 3	10,000	3548
W. M. Landers 1	9500	3704
G. W. Richey (61-ac) 4	11,000	3628
Eddie Showers & W. A. Moncrief, Collins (¾-ac) 1	7500	3712
Simms Oil Co.-Leon Russ, Flewellen (200-ac) 1	12,000	3686
Stanolind O&G Co., E. L. Walker (35-ac) 1	7000	3588
Stanolind-Simms-Continental Oil Co., Flewellen (400-ac) 2-A	11,000	3656
Stanolind & Simms, F. M. Fonville (100-ac) 3	10,000	3570
S. D. Spratt et al, Bumpas 1	9500	3631
Superior Oil Co., A. Jones (64-ac) 3	12,000	3660
Ten Texan Oil & Roy. Co., M. J. Fenn (7¼-ac) 1	10,000	3604
W. F. Turner et al, Alford Jones (63-ac) 4	8000	3648
Ty-Tex Oil & Dev. Co. & W. B. Letts, S. F. Kay (50-ac) 1	*	3669
Vacuum Oil Co., R. B. White (88-ac) 4	12,000	3579
Zeigler 3	8500	3512
Virginia Oil Co. (B. K. Isaacs) T. B. Harris (21-ac) 1-A	7800	3545
Yount-Lee Oil Co., M. M. Custer (75-ac) 1	3000	3570
Pat Hopkins (100-ac) 4	9400	3477
J. C. McKinley (63-ac) 2-A	9000	3566
J. C. McKinley (59-ac) 3-C	9200	3633
F. Smith (73-ac) 2-A	10,000	3526
VAN FIELD—		
Pure Oil Co., J. A. Bracken (69-ac) 4	7000	2947
A. R. Tunnell (101.2-ac) 7	8000	2955
R. L. Wells (51.5-ac) 13	8000	2938
The Texas Co., J. A. Brackem (40-ac) 2	8100	2933

WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
CRANE COUNTY—		
Gulf Prod. Co., J. T. McElroy 95	90	3061
FISHER COUNTY—		
The Texas Co., Daniel-Burham 1-A	1500	3101

NEW MEXICO

Company, Well and Location	Initial Production Bbls.	Depth
LEA COUNTY (Hobbs Field)—		
Continental Oil Co., State 4-A	¶138-6385	4051
Gypsy Oil Co., W. D. Grimes (East 1	¶3¼-3000	4190

TEXAS GULF COAST

Company, Well and Location	Initial Production Bbls.	Depth
BARBERS HILL—		
Nat Hunter Producing Co., Tarbutton 2	850	3506
Sinclair O&G Co., J. F. Wilburn 8	1450	4495
Sun Oil Co., O. H. Winfree 2	25	5360
CLEAR LAKE—		
Cullen & West & Gulf Prod. Co., Lockwood-Sharp 2A	3500	5147
HIGH ISLAND—		
Yount Lee Oil Co., Cade 22	400	5190
MOORES FIELD—		
Gulf Prod. Co., Moore 30	720	....
MOSS BLUFF—		
Texas Gulf Sulphur Co., D. J. Harrison 4	*	780
NASH DOME—		
Abercrombie & Harrison, Nash 15	1600	4485
PIERCE JUNCTION—		
Rio Bravo Oil Co., Settegast 22-A	500	4300

SOUTH TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
BEXAR COUNTY—		
Alamo Nat'l Gas Co.'s Gembler 1..	¶1	715
W. S. Roger's Dunlop 1	*	612
Tri State Oil Co.'s Carruth 1	*	770
C. L. Witherspoon's Ramzinski 1..	5	1579
DUVAL COUNTY—		
Duval Oil Corp.'s Bishop 6	550	2397
Humble O&R Co.'s White 2	450	2337
Mag Pet. Co.'s Wilson 6	¶40	2272
HAYS COUNTY—		
Jones et al's Byler 1	*	925
KARNES COUNTY—		
Jones et al's Cochran 1	*	1012
REFUGIO COUNTY—		
United Prod. Co.'s O'Brien 6	*	6451
SAN PATRICIO COUNTY—		
Welder Oil Corp.'s Welder 3	¶35	3661
STARR COUNTY—		
San Marcos Drlg. Co.'s Ivey 2	¶¼	204
WILLIAMSON COUNTY—		
H. Fritz et al's Fee 2	*	1115

MISSISSIPPI

RANKIN COUNTY, (Jackson Dist.)—		
Baker et al, Casey 1, 12-5-1e.....	¶35	2385

CALIFORNIA

DOMINGUEZ—		
Union Oil Co., Callender 25.....	500	4577
KETTLEMAN HILLS—		
Kettleman North Dome Association, No. 4-28J 28,000		8397
VENTURA AVENUE—		
Association Oil Co., Lloyd 109....	750	6965
Lloyd 81 1800		7600

OKLAHOMA

CREEK COUNTY—		
Gled Oil Co., Travis 3, se c ne, 13-19-8e	175	2239
Bryan Petroleum Co., Bucktrot 1, sw c se nw nw 35-17-10e .....¶2½		1675
Gled Oil Co., Holmes 1, ne c se ne 25-19-8e	*	3085
HUGHES COUNTY—		
Iglehart et al, McCoy 1, se c nw 27-9-10e	25	2313
JEFFERSON COUNTY—		
O. V. Beck, Seay 1, sw c nw se 34-6w-5w	125	1530
LEFLORE COUNTY—		
H. E. Dowd, Thomas 1, se c ne 17-3n-22e	*	1112
MUSKOGEE COUNTY—		
J. M. Foltz et al, Island 1, sw c ne 8-15-18e	¶11	1590
OKFUSKEE COUNTY—		
Sheppard et al, Sheppard 1, se nw sw 3-12-10e	*	3710
OKLAHOMA COUNTY—		
Phillips Pet. Co., Chapin-Levi 1, se c ne nw nw 10-11-3w (4h) 5920		6319
Argood, Catalina 1, se c nw se se 15-11-3w	160	6443
OKMULGEE COUNTY—		
Henley et al, Lee 1a, nw c ne sw 26-15-12e	¶1	1874
Wm. Sherry et al, Pense 1, c nw sw 21-16-11e .....¶2½		1752
Sheldon et al, Shelton 6, nw sw se 15-13-12e	*	1972
PAWNEE COUNTY—		
Arkansas Utility Co., Neilson 2, csl ne sw 27-21-8e	*	2281
STEPHENS COUNTY—		
J. C. Chambers et al, Dare 1, se nw se 2-2s-8w	40	1356

KANSAS

ELLSWORTH COUNTY—		
Keys Bros., Gregory 1, sw c 23-16-9w	*	3610
Hinkle, Palmer et al, Phelan 1, se c 2-17-10w	*	3344
GREENWOOD COUNTY—		
Syndicate O&G, Shook 7, ne c sw 6-24-12e	*	1855
McPHERSON COUNTY—		
Derby Oil and Gypsy, Sellers 1, sw c nw 19-19-1w	540	3404
Shawver and Shell Pet. Corp., Lively 1, sw c nw 21-19-1w	¶20	2908
SEDGWICK COUNTY—		
Derby Oil, Eastborogh 5 (owd) ne c sw ne 19-27-2e	70	2964

EASTERN STATES

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
WASHINGTON COUNTY—		
C. V. Inglefield & Co., Fee 1.....	*	2550
Potts Bros., Woodruff 1	¶½	1250

NEW YORK

WELLSBORO FIELD—		
Penn United Gas Co., Gee 1 .....¶4½		....

WEST VIRGINIA

CABELL COUNTY—		
Madison Gas Co., Holton 1	¶¼	2100
CALHOUN COUNTY—		
T. J. Jackson & Co., Jackson 2....	¶¼	2137
LINCOLN COUNTY—		
Turtle Creek Gas Co., Brumfield 1..	¶1	2357

SOUTHEASTERN OHIO

MORGAN COUNTY—		
Davis Oil Co., Kincaid 31	¶¼	253
WASHINGTON COUNTY—		
Anderson & Co., Greenlees 5	¶¼	1214

CENTRAL OHIO

ASHLAND COUNTY—		
Commonwealth Gas Corp., Phillips 1	*	....
BELMONT COUNTY—		
Washmuth, Callahan & Co., Butler 1	¶¼	1903
Peters, Purdy & Co., Wheatley 2 ..	¶¼	1969
FAIRFIELD COUNTY—		
City Natural Gas Works, Brucker 2	*	583
GUERNSEY COUNTY—		
W. B. Urban & Co., Brock 2	¶¼	1123
George McLaughlin, Mehaffey 1 ...	¶¼	1102
KNOX COUNTY—		
Emerald Petroleum Co., Hoagle 1..	*	603
MUSKINGUM COUNTY—		
W. H. Atha, Atha 5	¶½	3523
Ohio Fuel Gas Co., Mangold 1 ...	¶¼	3921
MEIGS COUNTY—		
Scioto Oil & Gas Co., Stevens 1...	¶½	892
A. N. Bengel & Co., Diehl 1	¶½	877
Ohio Fuel Gas Co., Cuckler 4	¶½	412
Lee 1	¶¼	527
STARK COUNTY—		
East Ohio Gas Co., Fawcett 2....	¶5	4285

NORTHWESTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
DARKE COUNTY—		
Adrian Tester, Miller 1	1	....
HANCOCK COUNTY—		
L. Cramer, Ernest 4	20	....
HENRY COUNTY—		
Lake Shore & Southwestern Oil & Metal Co., Jones 1	¶¼	....
LUCAS COUNTY—		
Dillon & McFrederick, Teft 1	30	1400
Teft 2	15	1397
Butz 1	5	1435
SENECA COUNTY—		
Neath & Geddis, Bloomfield 1	¶¼	....
Bloomfield 2	¶¼	....
McKinney Bros., Martin 2	¶¼	....
J. H. Murphy & Son, Getuldig 4 ..	¶¼	....
Recovery Oil & Gas Co., Haines 1	¶¼	1431
SHELBY COUNTY—		
Rucker Oil Co., Gaffena 3	10	....
WYANDOT COUNTY—		
McPheron, Miller & Cook, Bowman-Brillhart 1	60	1369
Temple & Kennedy, Flaxonhead 1	*	....
O'Neal & Co., Neiderkoker 1	¶¼	1348
Fruth 1	*	1355

KENTUCKY

WEBSTER COUNTY—		
Security Oil & Gas Co., Curry 6...¶1¼		....
Harkins 1	¶¼	....
HART COUNTY—		
Perkins & Co., Wilson 1.....	50	650
Carpenter & Co., Coffee 1	40	662
OHIO COUNTY—		
S. R. Berry & Co., Coleman 5	25	....
Jas. C. Ellis & Co., Tally 5	35	....
DAVIESS COUNTY—		
Brenner & Adams, Willams 1.....	100	637½

MICHIGAN

GRATIOT COUNTY—		
Wittmer Oil & Gas Co., Zimmerman 1 .....¶1½		....
WAYNE COUNTY—		
G. E. LeVeque, Riggs 1	*	252
D. W. Ross, Fee 1	*	118
Berry & Co., Berry Corners 1.....	*	125
Bertchinger, Fee 1	*	104

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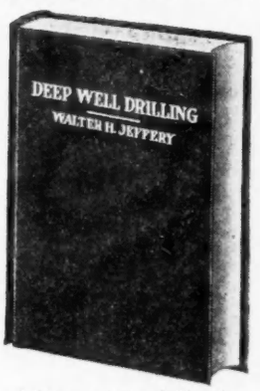

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ARKANSAS

UNION COUNTY—
Joe Modisette Drilling Co., Webb 1, nwc nw se Section 6-18-13.

LOUISIANA

CAMERON PARISH—Yount Lee Oil Co., Beaumont, State Land 48, 13-12s-10w, 1290 ft n and 1330 ft w of se cor of sec; State Land 49, 13-12s-10w, 1150 ft n and 1280 ft w of se cor of sec.

RICHLAND PARISH—United Gas Pub. Service Co., Shreveport, Rhymes 14, 32-17n-6e, 392 ft n and 663 ft w of nw cor se¼ se¼.

SABINE PARISH—W. F. Lacy, Shreveport, Buven 1, 11-7n-11w, 660 ft s and 660 ft e of nw cor nw¼ sw¼; Kate Holliday 1, 35-8n-12w, 330 ft n and 330 ft e of sw cor se¼ nw¼. Pelican Nat. Gas Co., Shreveport, L.L.L.L. Co. 11, 10-7n-11w, 330 ft n and 330 ft w of se cor ne¼ nw¼. H. W. Perritt, Shreveport, Bowman Hicks 5, 2-7n-12w, 150 ft s and 150 ft w of ne cor se¼ ne¼. W. W. Smith et al, Shreveport, J. W. Hale 1, 1-7n-13w, 330 ft s and 330 ft w of ne cor nw¼ se¼. A. H. Tarver, Shreveport, Outhrer 2, 12-7n-11w, 330 ft s and 330 ft w of ne cor nw¼ nw¼.

CALIFORNIA

INGLEWOOD—Baldwin Hills Syn., 1, 17-2-14.

KERN COUNTY—Rio Grande Oil Co., Dunn 1, 12-27-18.

KETTLEMAN HILLS — Kettleman North Dome Association 21, 1-22-17.

VENTURA AVENUE—Associated Oil Co., Lloyd 90, 26-3-23.

KANSAS

BUTLER COUNTY—Flint Hill O&G, Martin 2, cwl sw ne 27-28-4e.

COWLEY COUNTY—Brewer et al, Brewer 1, se nw ne 2-33-5e.

ELLIS COUNTY—Mid-West Refining Co., Furthmeyer 36 (owd) se c 25-12-16w.

GREENWOOD COUNTY Empire O. & R. Lewis 1, ne sw sw 9-24-12e.

McPHERSON COUNTY—Rush Oil Co., et al, Robinson 2, c ne sw 10-19-2w. Palmer et al, Winn 2, se c nw 7-20-1w.

RENO COUNTY — Shell Petroleum Corp. and Continental, Blake 1, sw se se 23-23-4w (owd).

RUSH COUNTY—Flynn et al, Whiteman 1, c ne, 16-18-16w. Schlegel, Skelton et al, Harmon 1, c nw 4-18-16w.

SEDGWICK COUNTY — Derby Oil, Eastborough 7, ne c sw ne 19-27-2e; Derby Oil, Eastborough 1, (owd) se sw ne 19-27-2e; Roy Ramsey, Davies 2, sw c 17-27-2e; Fisher & Lauck, Trustee 9, se nw se 19-27-2e; Seigel Bros., Soukup 1 (owd) se c ne nw ne 19-27-2e.

OKLAHOMA

CREEK COUNTY—Gled Oil Co., Travis 4, se c ne 13-19-8e. A. A. Bailey et al, Weaver 4, sw c nw 18-19-9e. Ben Curtis et al, Reynolds 1, sw c se 29-17-12e.

HUGHES COUNTY—Gypsy Oil Co., McNevins 2, ne c sw 5-8-9e. Mid-Continent Pet. Corp., Bruner 1, ne nw se 9-7-8e.

JEFFERSON COUNTY—O. V. Beck, Seay 2, se c sw nw se 34-6s-5w.

KAY COUNTY—Atkinson and Eason Oil Co., Hays 1, se c ne 24-28-3e.

MARSHALL COUNTY—M. A. Neff et al, Rutland 1, sw c nw nw se 30-5s-6e.

MUSKOGEE COUNTY — W. J. Metzger, Fracis 10 (owd), sw c ne sw 1-14-18e. J. Aggas, Rowe 1, ne c se ne 28-16-15e. C. D. Bradley et al, Jacobs 1, ne c sw 7-15-17e. E. Price, James 1, cnl nw ne 19-14-17e. H. W. Guinan, Lewis 1a, nw c se 8-14-17e.

OKLAHOMA COUNTY—Anderson et al, St. Louis 1, ne c nw sw se 34-12-3w. Slick Estate, Terminal 3, sw se nw 3-11-3w. Slick Estate, Terminal 4, ne c se sw nw 3-11-3w. Slick Estate, Terminal 5, ne c sw sw nw 3-11-3w.

PAWNEE COUNTY — P. Adamson, Jr., Peoples 1, sw c nw 3-20-8e. Gus Beagle, Duck 1, cel ne ne 30-20-10e.

TULSA COUNTY—A. E. Bradshaw et al, Cowans 2, nw c sw se 7-19-14e.

For Tabulation and Comparison
See Market Section

TEXAS

ARCHER COUNTY—Dr. C. W. Wallace, Wichita Falls, Fee, 167, 13, S. P. Sur. No. 1, 349 ft s of No. 5. Schulz & Weaver, Wichita Falls, F. C. Green, 160, 6, J. Levins sur, 750 ft from w and 290 ft from s line.

CASS COUNTY—Wm. S. King, Bloomburg, J. E. Anthony, 347, 1, J. C. Byers sur, 350 ft from e and 1500 ft from s line.

DUVAL COUNTY—S R & C Oil Corp. & Vacuum Oil Co., San Antonio, Duval Ranch, 645, 6, S 293, GC&SF sur, ne corner. Thomas & Tarver, Inc., San Antonio, Bishop, 160, 4, S 135, se corner.

FORT BEND COUNTY — Gulf Prod. Co., Houston, A. E. Myers, 455, 1, Jno. Rabb sur, 922 ft from w and 399 ft from s line.

GALVESTON COUNTY — Yount-Lee Oil Co., Beaumont, Cade, 24, N. Fitzsimmons sur, 1250 ft from n and 1010 ft from e line.

GREGG COUNTY — Louis Godlen, Longview, E. L. Walker, 20, 1, M. Dillard sur, 330 ft from s and e lines. Tarkington & Reynolds, Dallas, C. Smith, 50, 1, J. M. Morris sur, 300 ft from s and e lines. M. F. Wimmer, Kilgore, J. M. W. Acuff, 1½, 1, M. Van Winkle sur. Showers & Moncrief, Longview, T. Snoddy, 6, 1, Wm. Robinson sur, 288 ft from n and 229 ft from w line. J. W. Halsell, Henderson, School, 2, 1, M. Dillard sur, 178 ft from e and 120 ft from s line. P. E. Barton, Kilgore, Fee, 3, 1, M. Van Winkle sur, 107 ft from n and 170 ft from w line. Iowa-Payne Oil Co., Marshall, W. H. York, 41, M. Dillard sur, 30 ft from n and 70 ft from e line. Jones-O'Brien, Inc., Shreveport, La., J. Lloyd, 25, 2, L. B. Outlaw sur, 143 ft from w and 330 ft from s line. Kornkrumpt & Staple, Longview, L. A. Smith, 1, 1, Gladewater sur, 101 ft from w and 139 ft from s line. W. L. Kornkrumpt, Longview, R. W. Little, 1, 1, Blk. 36, H. R. Hokit sur. Merritt et al, Kilgore, J. H. Williams, 3, 1, M. Van Winkle sur, 76 ft from n and 105 ft from w line. Mullendore & Berry, Longview, M. Magrill, 21, 2, D. Sanchez sur, 282 ft from n and 330 ft from w line. O. W. R. Oil Co., Dallas, C. E. Davis, 33 1, Wm. Castleberry sur, 330 ft from e and 197 ft from s line; 2, 330 ft from w and 197 ft from s line; 3, H. Hathaway sur, 330 ft from e and 227 ft from n line. Pitkin-Goldston Oil Co., Longview, C. Hensley, 6, 1, J. Ruddle sur, 225 ft from n and 290 ft from e line. Artic Oil Co., Fort Worth, J. S. King, 2, 1, M. Van Winkle sur, ne corner. Morgan-McMinn, Dallas, H. Foster, 7, 1, W. G. Painter sur, Hunt Bros., Carars & Mays, Mexia, W. Hawkins, 1, 1, W. P. Chisum sur. Petroleum Finance Corp., Longview, Laird & Crim, 25, 2, L. B. Outlaw sur, 235 ft from n and 330 ft from e line. Magnolia Pet. Co., Dallas, H. L. Foster, 100, 1, Wakeland-Painter sur, 270 ft from s and 330 ft from w line; L. A. Griffin, 44 5, M. Van Winkle sur, 660 ft s of No. 3; M. B. Hughey, 80, 4, Wm. McCurry sur, 330 ft from s and w lines; L. A. Griffin, 44, 6, M. Van Winkle sur, 104 ft from w and 162 ft from s line; A. Hicks, 99, 1, D. Dainwood sur, 760 ft from e and 330 ft from s line. Superior Oil Co., Dallas, H. Pritchard, A, 100, 2, F. W. Johnson sur, 830 ft from n and 939 ft from w line. East Texas Ref. Co., Dallas, T. W. Tuttle, 54, 1, Wm. Castleberry sur, 450 ft from e and 330 ft from s line; W. L. Fuller, 50, 1, D. Sanchez sur, 330 ft from n and w lines. T. P. Coal & Oil Co., Fort Worth, Fee, 182, 4, Geo. Hampton sur, 330 ft from s and e lines. Texas Co., Shreveport, La., J. M. Dickson, 88, 4, Wm. McCurry sur, 330 ft from s and e lines. Simms Oil Co., Dallas, J. J. Flewellen, B, 374, 2, M. Mann sur, 330 ft from e and 880 ft from s line. Sun Oil Co., Dallas, M. Thomas, 79, 1, P. McAnelly sur, 2847 ft from n and 432 ft from e line. Byrd-Frost, Inc., Longview, M. B. Hughey, 110, 6, L. B. Outlaw sur, 330 ft from s and e lines; 4, 330 ft from n and e lines; 5, 1002 ft n of No. 6. Alexander, 26, 1, M. Tenison sur, 330 ft from s and e lines. Humble Oil & Ref. Co., Houston, G. W. Willingham, 40, 3, D. Sanchez sur, 296 ft from w and 406 ft from s line. Arkansas Fuel Oil Co., Shreveport, La., J. C. McKinley, C, 54, 2, Wm. Robinson sur, 330 ft from s and e lines. Fain-McGaha Oil Corp., Wichita Falls, A. Tooke, 100, 1, W. C. Wakeland sur, 1409 ft from s and 703 ft from w line. Lucey Pet. Co., Longview, A. M. Kinsel, 47, 1, H. H. Kirk sur, 287 ft from n and 330 ft from w line. Yount-Lee Oil Co., Beaumont, F. K. Lathrop, C, 114, 3, Wm. Robinson sur, 330 ft from s and w lines; A. Lee, 67, 3, Wm. Robinson sur, 330 ft from s and e lines; G. E. Fenton, A, 78, 4, D. Sanchez sur, 330 ft from s and e lines; J. Flemister, 60, 4, G. W. Hooper sur, 330 ft from s and 991 ft from e line; J. M. Tuttle, 50, 2, Wm. Castleberry sur, 330 ft from s and w lines; H. Stephens, 57, 3, Wm. Castleberry sur, 330 ft from s and e lines. Shell Pet. Corp., Dallas, A. N. King, 160, 1, G. A. Thompson sur, 245 ft from n and 550 ft from e line; W. W. Elder, 157, 10, J. S. Caruthers sur, 214 ft from e and 284 ft from s line. Tidal Oil Co., Fort Worth, A. Davis, 130, 1, Painter & Hart sur, 330 ft from n and e lines; E. M. Nettleton, 100, 7, J. Ruddle sur, 50 ft from n and 1830 ft from e line; J. H. Shepperd, 114, 1, T. Allen sur, 250 ft from n and 105 ft from e line. Amerada Pet. Corp., Tulsa, Okla., C. Bumpas, 98, 2, W. H. Castleberry sur, 300 ft from w and 250 ft from s line. California Pet. Corp., Shreveport, La., W. M. Clements, 60, 2, M. Mann sur, center. Gulf Prod. Co., Houston, J. C. Judge, 1080, 2, F. W. Johnson sur, 332 ft from n and 330 ft from w line.

HARRIS COUNTY — Drummett Oil Co., Houston, M. E. Schneider, 600, 1, Sanders sur, 2750 ft from n and 1170 ft from e line. J. H. Burt, Houston, Echols, 23, 1, J. B. Jones, Blk. 5, 425 ft from n and w lines.

HILL COUNTY—G. R. Richardson, Bishop, E. Spruce, 110, 1, Wright sur, 600 ft from e and 60 ft from s line. C. E. Groover, Waco, T. Pye, 101, 1, C. Ratcliffe sur, 500 ft from w and 150 ft from n line.

LIMESTONE COUNTY — J. R. Stroud, Groesbeck, Strother, 50, 3, W. G. McKenzie sur, 700 ft from e and 150 ft from s line.

LIVE OAK COUNTY — Houston Oil Co., Houston, H. Cartwright, 24, J. M. Colchado sur, 784 ft ne of No. 4.

RUSK COUNTY—Johnston & Rogers, Tyler, C. W. Mullins, 30, 2, F. Cordova sur, 370 ft from n and 330 ft from w line. Pilot Oil Co., Dallas, M. A. Thrash, 30, 2, F. Cordeva sur, 285 ft from n and 330 ft from w line. D. D. Rogers, Dallas, L. J. Pinkston, 2, 1, Cadena sur, 162 ft from e and 177 ft from s line. T. W. Murray, Overton, Kee-Moore, 2, 1, G. W. Tutt sur, sw corner. W. F. Hardin, Overton, J. W. Pilgreen, 3, 1, J. Lindley sur, 175 ft from w and 400 ft from s line. Robert & Roscoe, Henderson, C. E. Christian, 23, 3, R. W. Smith sur, 330 ft from s and e lines. Hale & Hatfield, Overton, J. C. Goforth, 30, 1, W. G. Tutt sur, 550 ft from e and 330 ft from s line. R. M. V. Oil Co., Henderson, Pinkston, 73, 2, B 28, M. J. Pru sur, 330 ft from n and e lines. Cordova Union Oil Corp., Fort Worth, J. S. Bean, 134, 5, J. Lewis sur, 330 ft from n and e lines. Magnolia Pet. Co., Dallas, N. Bean, 100, 2, J. Lewis sur, 330 ft from w and 450 ft from s line; S. E. Brox, 84, 1, Cooper & Grace sur, 330 ft from n and w lines; C. C. Still, 100, 6, M. McCabe sur, 275 ft from n and 330 ft from w line. Mid-Kansas Oil & Gas Co., Shreveport, La., M. L. Thompson, 98, 4,

I. Moore sur, 330 ft from n and e lines; E. E. Moores, 200, 8, J. B. Cadena sur, 330 ft from w and 3000 ft from s line; M. M. Cross, 165, 7, I. Proctor sur, 330 ft from n and e lines; M. Kangera, 60, 1, J. B. Cadena sur, 261 ft form e and 281 ft from s line. Texas Co., Shreveport, La., W. W. Henry, 229, 1, W. J. Roane sur, 330 ft from n and e lines; A. W. Kersh, 211, 1, E. B. Fowlkes sur, 330 ft from n and e lines; J. M. Price, 90, 1, T. M. White sur, 330 ft from n and w lines. H. L. Hunt, Tyler, J. R. Vinson, 59, 1, T. H. Smith sur, 330 ft from n and w lines; V. E. Reed, 120, 1, T. J. Martin sur, 330 ft from n and w lines; E. B. Alford, 8, 1, T. J. Moore sur, 500 ft from e and 180 ft from s line. Republic Prod. Co., Longview, J. H. Scoggins, 58, 2, E. Collard sur, 330 ft from n and e lines. Empire Gas & Fuel Co., Tulsa, Okla., H. P. Leverett, 4, Jno. Snow sur, 447 ft from e and 186 ft from s line. Humble Oil & Ref. Co., Houston, First State Bank, 80, 5, J. Smith sur, 355 ft from e and 330 ft from s line; M. Joyner, 20, 1, F. Cordova sur, 356 ft from n and 330 ft from w line; C. W. Wilson, 96, 1, T. J. Martin sur, 400 ft from n and 510 ft from w line; W. A. Mullikin, 166, 8, T. J. Martin sur, 268 ft from n and 325 ft from w line; L. D. Crim, 94, 37, I. Ruddle sur, 225 ft n of center of s line. Arkansas Fuel Oil Co., Shreveport, La., E. M. Bealle, 79, 5, Cordova sur; J. W. Wheelis, 80 6, R. H. Penny sur, 200 ft sw of center of ne line.

SMITH COUNTY—H. L. Hunt, Tyler, R. W. Fair, B, 138, 2, Vargas sur, 1050 ft from n and 450 ft from e line. Mid-Kansas Oil & Gas Co., Shreveport, La., Corrected location. M. M. Cross, 165, 8, I. Proctor sur, 330 ft form n and w lines, corrected location. J. H. Sharp, 482, 2, M. S. Coy, sur, 415 ft from n and 1556 ft from e line. W. L. Sessions, Dallas, S. B. Strong, 50, 1, D. Shaw sur, 330 ft from s and e lines. Pugh-Hickman Drilling Co., Fort Worth, S. S. Cook, 28, 2, Jas. Jordan sur, R. G. Wright, 20, 2, J. Vargas sur. Magnolia Pet. Co., Dallas, J. R. Wright, 166, 13, J. Vargas sur, 439 ft w of No. 7.

TERRELL COUNTY—H. H. Sides, Sheffield, F. C. Bates, 1, S 5, B A4, G. W. Turney sur, 2157 ft from n and 2482 ft from w line sec.

UPSHUR COUNTY—Paul L. Miller, Longview, D. C. Shelton, 3, 1, Wm. King sur, 150 ft from n and e lines. H. W. Black, Peoria, Ills., I. M. Burroughs, 30, 1, Wm. King sur, 330 ft from s and w lines. Rancho Oil Co., Fort Worth, H. Moyer, 50, 4, A. T. McGee sur, 330 ft from s and e lines; 3, 330 ft from s and w lines. Galvez Oil Corp., Tulsa, Okla., W. W. Holland, 45, 1, T. Allen sur, 340 ft from e and 341 ft from s line. Shasta Oil Co., Langview, E. F. Hall, 73, 1, R. T. Gibson sur, 990 ft from s and 330 ft from w line. Humble Oil & Ref. Co., Houston, D. S. Shelton, 19, 2, Wm. King sur, 150 ft from s and e lines; C. T. Shelton, 59, 2, Wm. King sur, 150 ft from w and 524 ft from s line. Shell Pet. Corp., Dallas, C. C. Landers, 61, 6, G. W. Hooper, 390 ft from n and 303 ft from w line. Magnolia Pet. Co., Dallas, J. W. Free, 129, 11, G. W. Hooper sur, 460 ft from n and 203 ft from w line; S. Christian, 15, 1, G. W. Hooper sur, 238 ft from n and 330 ft from w line; R. A. Adkins, 100, 4, G. W. Hooper sur, 150 ft from n and e lines.

VAN ZANDT COUNTY — Hutcherson & Anderson & Priest, Dallas, C. G. Beckham, 106, 1, A. S. Johnson sur, 330 ft from s and 500 ft from w line.

WILLIAMSON COUNTY—J. R. Wilder et al, Taylor, Fee, 50, 1, H. Owens sur, 400 ft from e and 1200 ft from s line.

WARD COUNTY — Abell Bros., Midland, Sloan, 80, 1, S 24, B 5, H&TC sur, 330 ft from nw and ne line of sec.

YOUNG COUNTY—E. D. Willis et al, Jean, Belknap, 40, 8, S 22, TE&L sur, 150 ft from n and e lines. Petroleum Prod. Co., Wichita Falls, J. K. Jeffery, C, 40, 1, 52 TE&L sur, 150 ft from s and w lines. Wheeler & Brashear, Wichita Falls, Country Club, 53, 1, H&TC sur, 150 ft from e and 1005 ft from s li Blk 154. E. H. Sharo, Olney, A. J. Cantrell, 40, 1, 630 TE&L sur, 150 ft from s and w lines. King Royalty Co., Dallas, J. F. Larimore, 160, 30, 2246 TE&L sur, 958 ft from w and 1050 ft from s li s½. Seitz, Comegys & Seitz, Inc., Wichita Falls, N. Finch, A, 20, 5, 31 TE&L sur, 150 ft from n and w lines.

Wildcat Reports from All Sections

▼ ▼ ▼

TEXAS GULF COAST

Completions

Company, Well and Location	Initial Production Bbls.	Depth
BURLESON COUNTY—		
Marts et al, Boyett 1	*	3010
HARRIS COUNTY—		
Highlands Pet. Corp., Haney 1	*	5872
WHARTON COUNTY—		
Beard and Brumblow, Brown 1 ...	*	3345

BRAZORIA COUNTY — The Texas Co.'s Belcher 2, Manvel dist, 1000 ft se Belcher 1, ru. United Oil Syndicate's Levitt 1, 3 mi n Danbury, sd at 1560 ft. W. D. Southerland et al's C. W. Chapman 1, Lochridge dist, ru on lcn 250 ft n and 150 ft w of sec Strip No. 2, Andrew Robinson sur.

BURLESON COUNTY—Marts et al's Boyett 1, 5 mi se Wellbourne, abn in sn and sh at 3010 ft. Marek & Sons' A. Marek 3, 2½ mi sw Tunis, dr rk at 2183 ft.

CHAMBERS COUNTY — Pure Oil Co.'s Lost Lake 6, Lost Lake dist, dr sdy sh 5110 ft. The Texas Co.'s J. F. Wilburn 7, Barbers Hill, set 7 in cas at 4372 ft, O. S. 4377-85 ft, prep to dr plug; Lawrence Fee 2, Barbers Hill, core 3618 ft, no show, td 4164 ft, no show.

FORT BEND COUNTY—Cullen and West and Gulf Prod. Co.'s Lockwood-Sharp 3-A, Clear Lake, show of oil in sn and sh 5025-5104 ft, br O. S. 5104-14 ft; Lockwood-Sharp 4-A, Clear Lake, dk; Lockwood 2, dr 3900 ft. Gulf Prod. Co.'s Myers 1, Clear Lake, lcn 800 ft n Cullen and West and Gulf's Lockwood-Sharp 2-A, rat hole.

GALVESTON COUNTY — Yount Lee Oil Co.'s Cade 22, comp for 400 bbl at 5190 ft; Cade 23, High Island dist, dr 4418 ft; Cade 24, lcn 300 ft w 22, N. Fitzsimmons sur.

GRIMES COUNTY—Rianjo Oil Co.'s Cuthrell 2, Carlos Dome area, 3 mi e of Carlos, dr rk 3200 ft.

HARRIS COUNTY—Highlands Pet. Corp.'s Haney 1, 5 mi w Barbers Hill, abn Big Lime 5872 ft. H. H. Givens & Daybault's Lobit 1, Addicks dist, dr hd sn 2543 ft. Gulf Prod. Co.'s Taylor 33, Pierce Junction extension, set 2 jts 6⅝ scr in sn and sh shwg oil at 3820-35 ft. Tilton et al's Barnes 1, Pierce Junction, td 3930 ft, sn and sh and O. S. 3805-65 ft.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn — abandoned; bbls—barrels; b.s.—basic sed ment; cas —casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in. —inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd — shut down; sdtr — sidetracking; sp — spudding; sr — straight reaming; std — standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

Humble O. & Ref. Co.'s Erwin 2, Mykawa, 900 lbs pr on pump, cmtd bottom of hole at 6400 ft.

HOUSTON COUNTY — Apex Drlg. Co.'s Thompson Bros. Lbr. Co. 1, 6 mi s Lovelady, sd at about 2365 ft. Ramsland et al's Pennington 1, 4 mi w Grapeland, dr sh 1680 ft.

JACKSON COUNTY — Chicago Gulf Co.'s Drushell 10, Edna gas field, cmt 6⅝ inch cas at 2640 ft.

JASPER COUNTY—Hext Drlg. Co.'s Flournoy 1, 4 mi se Jasper, dr gbo 2122 ft.

JEFFERSON COUNTY — Humble O&R Co.'s Nelson 1, 4 mi se Cheek, dr sh 4600 ft. John I. Pipkin & Elam's Broussard 1, 2 mi w Sabine, dr below 278 ft.

LIBERTY—L. B. House's C. T. Palmer 1, ¾ mi s Cleveland, 15 mi n North Dayton dome, dr 3520 ft. Texas Gulf Sulphur Co.'s D. J. Harrison 5, Moss Bluff, lcn 200 ft n and 450 ft w No. 3. B. Manning's Ruth Sargent 1, Moss Blff, lcn 50 ft s and 450 ft e of Texas Gulf Sulphur's Sargent 2.

MATAGORDA COUNTY—Harvey Smith's Boker 1, Citrus Grove dist, dr gbo and li 3275 ft. United North & South's Stoddard 1, Buckeye dist, fsh 5540 ft, shw of gas at 5475-5510 ft. Hamill & Powers' Myers 1, Markham dist, dr 3245 ft, sn shwg oil at 3230 ft.

MONTGOMERY COUNTY—Humble O&R Co.'s W. A. Renn 1, 4 mi s Magnolia, dr 4337 ft. G. W. Strake's South Texas Dev. Co. 1, 2¼ mi se Conroe, dr 4683 ft, dst at 4130, no show. Pevehouse Oil Co.'s Sealey 1, 5 mi w Conroe, dr 775 ft. Stanolind Oil & Gas Co.'s R. M. Gary 1, 1 mi nw Dobbins, lcn.

ORANGE COUNTY—Crews Oil Co.'s Mansfield 1, Orange dist, dr 2045 ft gbo. The Texas Co.'s Polk Kuhn Glass Co. 1, td 3310 ft, sndy sh and O. S. 3150 ft.

POLK COUNTY—T. B. Hoffer et al's Saner Ragley Lbr. Co. 1, 6 mi w Corrigan, dr sh 1520 ft.

WALLER COUNTY—S. E. McDaniel's Citizens State Bank 1, 4 mi nw Hempstead, spd and sd.

WASHINGTON COUNTY—Penn Tex Oil Co.'s Kansas 2, dr 3522 ft.

WHARTON COUNTY — Beard & Brumblow's Brown 1, 3 mi s El Campo, abn at 3345 ft. W. H. Wallace's J. N. Lee 1, 2½ mi w Lissie, dr 3747 ft.

SOUTH TEXAS

ATASCOSA COUNTY—Glen Mathis' Mrs. G. M. Martin 2, Navarro sur, 3 mi s Amphion, 100 ft sw No. 1, sd 2980 ft.

BASTROP COUNTY—W. A. Allen's Birmingham 1, James Stewart sur, sd 1220 ft, Texas Dev. Co.'s C. H. Ray 1, Thos. Christian sur, 1½ mi ne Elgin, dr 2120 ft.

BEE COUNTY—Al A. Buchanan's Mary Dorenfield et al's 1, John Lyford sur, in Holzmark gas district, lcn. C. R. & M. Drlg. Co.'s Geo. Ray 1, w of Buchanan & Lefevre lease, John Williamson sur, Damac pool, lcn. J. M. Davis et al's Geo. Ray 1, e offset Buchanan & Lefevere well, Jno. Williamson sur, Damac pool, lcn. Houston Oil Co.'s J. F. Portis 2, A. Smalley sur, Damac pool, coring 3900 ft. J. C. Hughes et al's P. H. Martin 1, John Lyford sur, just s Holzmark pool, dr 1554 ft. Humble Oil and Ref. Co.'s Laura Thompson 1, Garrett Roche sur, dr 3362 ft, show sw. J. S. Mauldin's Mauldin 1, G. A. Kerr sur, just s Pettus townsite, sd 3930 ft. W. L. Morgan et al's Ray 1, just s Weinert lease, Jno. Williamson sur, Damac pool, dk. T. B. Slick Estate's Geo. A. Ray 2, G. A. Kerr sur, in Damac pool, to make lcn. The Texas Co.'s L. Brammel 1, John Pace sur, nw offset Buchanan & Lefevere well, Damac pool, to make lcn. United Production Co.'s Geo. A. Ray 39, T. Hanson sur, just ne Pettus discovery pool, coring 7106 ft. H. H. Weinert & C. R. & M. Drlg. Co.'s Geo. A. Ray 1, Jno. A. Williamson sur, Damac pool,

td 3935 ft, sand 3929-32 ft, sandy shale 3933-35 ft, show salt water on drill stem test, to abn.

BEXAR COUNTY—Alamo Nat'l Gas Co.'s (Whipple et al) Gembler 1, Menchaca sur No. 51, nw Dobrowolski gas pool, broken sand abt 690-715 ft, made 1,000,000 cu ft gas. J. E. Anderson's S. A. Suburban Irrigated Farms 1, C. Logan sur, near Kirk, 20 mi sw San Antonio on Chicon Lake fault, csg set 1177 ft, top Anacacho 1117 ft, sandy lime 1137-1200 ft, show abt 100,000 cu ft gas daily, now dr 1258 ft. S. W. Blount's S. A. Land & Dev. Co. 1, 1 mi e Medina river on Palo Alto rd, 12 mi s San Antonio, sd 325 ft, move in equipment. Jno. T. Callahan's J. H. Buch 1, J. M. McCamley sur, dr 650 ft. Crawford & Terrell's L. F. Ridder 1, J. A. Baerera sur No. 58, sp in. Gatlin Oil Co.'s Beck 9, A. Montez sur, Dobrowolski pool, lcn. Ewell Neill's J. M. Watson 1, Martinez sur, 10 mi s San Antonio, top Austin chalk 1995 ft, now dr 2100 ft. W. S. Rogers et al's Dunlop 1, Juan Montez sur, sd 612 ft, dropped as abn until work resumes. Schneider, Rees et al's Claussen 2, n San Antonio, SJ&A sur No. 17, re-dr, now at 1000 ft. Tri-State Oil Co.'s Carruth 1, F. Bolen sur, sd 770 ft, dropped as abn until work resumed. C. L. Witherspoon's Ramzinski 2, J. W. Rialls sur, Cooksey pool, completed 5 bbls, sandy shale 1379-1415 ft, td 1579 ft; Pollack 2, J. W. Rialls sur, move on.

BLANCO COUNTY—Hardy Sitton's Standeford 1, sur 155, 3½ mi nw Blanco City, sd 686 ft. Forest Oil Co.'s (Rosenfield et al) Hohenberger, sur No. 94, sd 712 ft. Thomas Hicks et al's Specht & Wiedner 1, Thos. M. Fowler sur No. 27, 2 mi s Twin Sisters, sd 1635 ft.

CALDWELL COUNTY—Joe Bruner's Malone 1, A. Floyd sur, 2 lcn s Salt Flat, csg set 2396 ft, td 2572 ft, showed abt 20 bbls, shot, some increase now, swabbing. North's (Ralph Lewis et al's) Keith McGee 1, Pinchback ¾ mi sw Mills-McMahon well, spd and sd acct water, prep to redr. Detroit Tex Dev. Co. (M. O. Rayor) Dunlap 2, Seal sur, lcn.

COMAL COUNTY—Caldwell & Lanier's T. J. Byler 1, 10 mi s Blanco City, HE&WT sur No. S-894, sd 754 ft.

DUVAL COUNTY—Cole Pet. Co.'s Benavides 71, blk 8, sur 19, e of Cole field, test 200 ft oil through tester in 10 min, sand 1747-57 ft, bailing. Duval Oil Corp.'s Bishop Cattle Co. 6, sur 135, S&O pool, set 6⅝ inch csg 2335 ft, sand 2343-55 ft and 2388-97 ft, flow 550 bbls on ¾ choke. Humble O&R Co.'s White 2, sur 59, S&O pool, td 2339 ft, completed 200 bbls, then increase to 450 bbls, sand 2291-97 and 2323-37 ft, set 6⅝ csg, 2289 ft. Magnolia Pet. Co.'s Wilson 6, Sec. 136, S&O pool, set 8⅝ inch csg 2230 ft, sand 2230-36 ft, set 5¾ inch csg 2248 ft, td 2272 ft, completed 40,000,000 cu ft dry gas. SR&C & Vacuum Oil Co.'s Duval County Ranch Co. 6, sur 293, SRC pool, 6⅝ inch csg set 1727 ft, top of sand, dr in. Thomas & Tarver's Bishop Land and Cattle Co.'s Welder Wood 1, 16 mi from S&O pool, sec 269, Welder-Wood ranch, sand 2152-55 ft, show several thousand ft gas, no water on dst, set csg; Bishop Cattle Co. 4, sur 135, S&O pool, set 6⅝ inch csg abt 2300 ft, prep to dr in.

FRIO COUNTY—Arthur H. Wray's Roche 1, sec 123, A. Hutzler sur, near Big Foot, 1500 ft sw Burns 1, sd 3180 ft.

GOLIAD COUNTY—Benedum & Trees and Plymouth Oil Co.'s Parks 1, 2900 ft se Gibson Parks 1, dr 3904 ft. Neel et al's Pettus 1, J. M. Pettus tract, Pedro Trevino sur, w Goliad, dr 765 ft last rept.

GUADALUPE COUNTY—Harry Bruner's Jim Sherrill 2, Geo. Allen League, near Staples, sd 190 ft for rotary. Barnhill et al's Hoffman 1, Dewitt sur, between Seguin and Darst Creek, dr 1702 ft. John F. Camp's Dan Denman 1, Wm. Arrington sur, 2500 ft s Comp well, top chalk 2256 ft, hit crevice 2400 ft, set 6⅝ inch csg, official gauge 1380 bbls, worked over, make abt 2500 bbls. W. M. Eiser et al's Wells 1, ne quarter Jose de la Baume sur, ru and sd. Humble Oil and Refining Co.'s Dan Denman 2-C, top chalk 2186 ft, base of chalk 2320 ft, top of Buda 2352 ft, top of Del Rio, 2420 ft, top of Georgetown 2477 ft, now drilling below 2480 ft. William Arrington sur, Camp pool, C. McGarity et al's August Wesch 1, H. M. Thompson sur No. 89, 2 mi n Marion, sd 1200 ft. Pray & Chamberlain's Krueger 1, near Guadalupe River, H. Branch sur, dr 1512 ft, gas show 800 ft. Schleter Asherton & Armstrong's Ogletree 1, Robt. Smith sur, 1 mi n old Luling field, sd 1745 ft. J. M. Scott's E. Drumm 1, C. Campbell sur, near Staples, dr 720 ft.

HAYS COUNTY—J. C. Jones et al's Byler 1, John Ingram sur, .15 mi nw San Marcos, sd 925 ft, dropped as abn.

HIDALGO COUNTY—E. J. Barrett & P. Kanellos' J. D. Brook 1, 15 mi nw Mission, dk. Dayle L. Smith Oil Co.'s Fernandez 5, Porcion 75, 21 mi w McAllen, casing set 3982 ft, salt water sand 3992 ft, gas sand 4010-26 ft, ran open several days, showing plenty salt water and gas, attempting to cut off salt water.

JIM HOGG COUNTY—O. W. Killam's R. Lopez 2, Blk. 4, sur 255, Henne, Winch & Farriss pool, sand topped 1971 ft, set 6⅝ inch csg at 1969 ft, w.o.c.

JIM WELLS COUNTY — Stanolind O&G Co.'s N. A. Hoffman 1, La Trinidad sur, 4½ mi sw Ben Bolt, 6004 ft, sd for orders.

KARNES COUNTY—V. F. Neuhaus's L. L. Russell 1, C. Martinez sur, just n Kennedy-Runge Highway, sd 1804 ft for fuel. Jones et al's (J. Morrisey) Cochran 1, D. B. McConnel sur, k Kennedy, sd 1012 ft, dropped.

KENDALL COUNTY—Borgett et al's W. Hagg 1, w Avery sur, sd 1250 ft. F. S. Dibble's Ellebracht 1, TW&NG sur No. 77, 12 mi n Sisterdale, sd 50 ft. Dixon Oil Co.'s Behr 1, Jessie Wilson sur, 3 mi s Sisterdale, sd 2715 ft. R. M. Perkins' (W. H. Sartain) Lawhorn 1, 30 ft sw original test, D. L. Richardson sur, sw Kendalia, sd 175 ft. Hardy Sitton's W. B. Garvin 1, D. Richardson sur, 1 mi ne Kendalia, sd 1480 ft.

KERR COUNTY—Evans and Gant's Seiker and Mears 1, CCSD&RGNR Ry. sur, sec 1605, 2 mi ne discovery, sd 4031 ft sandy shale; Jeff Love 1, J. Martinez sur No. 1594, sd 4060 ft, brown lime. Evans and Sprinkle's Jeff Love 2, sec 1592, ½ se discovery, dr 4042 ft. Chester A. Martin's J. E. Young 1, A. E. Bruce sur, ne discovery, 1310 ft mov on 12½ inch csg.

KLEBERG COUNTY — H. Carter's R. H. Simmons 1, sec 7, King sur No. 3, dr around 900 ft.

LA SALLE COUNTY—Buckley Ranch O& G Co.'s Buckley et al 1, sur 37, Buckley-Walling ranch, sd 4504 ft. Salt Lake City Oil Co.'s J. F. Mayes 1, sec 19, blk 20, I&GN sur, sd 1100 ft.

LIVE OAK COUNTY—Henderson Coquat et al's H. Hewitt 1, Thomas Adams sur, sec 4, sd 445 ft. Phillips Pet. Co.'s Sanger 1, Thomas Welch sur, near county line, dr 1700 ft. V. G. Schimmel's (Texas Pet. Co.) C. L. Terrell 1, s Fort City, D. O. Boyle sur, sd 960 ft acct lack water.

MAVERICK COUNTY — I. N. Boicourt's Bandera School Land 2, sd 2284 ft. Texas Gas Utilities Co.'s Chittim 8, sec 129, blk 7, I&GN sur, Chittim field, dr 4876 ft last rept.

McMULLEN COUNTY — A. E. Adams' Martin 1, L. E. Melon sur, 15 mi sw Tilden, sd 363 ft. Brodie, Shearer and Emerich's Shiner 1, Henry Brewer sur, 12 mi se Tilden, sd 2006 ft. Jacob, Buzzini & Pickett's Jacob 1, Southern gas district, W. H. Jacob sur No. 8, near Live Oak line, ru.

MEDINA COUNTY — Frank A. Brown's Jacob Fohn 1, J. F. Tony sur, 8 mi s Hondo, fsh 922 ft. C. J. Webster O&G Co.'s (National) Adams 1, Hillemeyer sur No. 25, near Deving, set 145 ft sur csg, re-dr.

NUECES COUNTY—A. C. Erwin's C. M. Trott 1, sur No. 416-500, lcn. Gulf Coast Oil Co.'s Sagarin 1, Sec. 1V9, Kinney sur, Saxet field, sand showed oily mud with 500 lbs. pressure on dst, at 4638 ft; Elder 1, nw Harrell 1, Saxet field, sand 4892-97 ft, made sw. Neal-Milton & Kepley Prod. Co.'s Roark 1, 2000 ft nw Saxet Dunn 8, Saxet field, sand 4825-32 ft, show 55 fourbles pure oil on dst, made sw when dr in, set whipstock 4832 ft, sidetracked and coring sand 4844, 4840-44 ft. Saxet Oil Co.'s Weil 5, Saxet field, dr 800 ft. Stanolind O&G Co.'s (Southern Crude Oil Purchasing Co.) Chas. E. Stratton 1, sec 12, Stratton sub, P. Anchow sur, 6 mi s Agua Dulce, sd for orders, td 4765 ft.

REAL COUNTY — Evans and Sprinkle's Haby 1, AB&M sur, 7 mi sw Love 1, sec 175, set 8¼-inch csg 2560 ft, now sd.

REFUGIO COUNTY — Blanco Creek Oil Corp.'s Dammann 1, blk 16, Bonnie View Ranch Sub, 8 mi s and e Refugio field, sd 4685 ft. G. C. Dizon's P. M. Peck 1, Sec. 24, Bonnie View Ranch, ru. Humble O&R Co.'s M. V. O'Conner 1, John Keathing sur, near Victoria line, set 9⅝ inch cas 3879 ft, sand 3912 ft, no test, sand 2940 ft, test sw, dr ahead. Larcro Gas & Pet. Co.'s Strauch 4, Blk 21, Refugio, dr 2100 ft. Moody-Seagraves Prod. Co.'s St. John 2-A, Refugio sur, dr 4225 ft. Geo. E. Smith's (Mission Drlg. Co.) J. J. O'Brien 3, Refugio town tract, dr 370 ft. United Prod. Corp.'s O'Brien 6, Refugio, abn 6451 ft; W. J. Fox 2-A, Hews and L. Brown sur, Refugio, dr 5796 ft.

SAN PATRICIO COUNTY — Atlantic Oil Producing Company's Welder 1C, on Welder ranch, Blk C, about 10,000 ft sw Aransas gasser, dr 1000 ft. Welder Oil Corp.'s Welder 3, 900 ft ne No. 2, Welder gas field, sand 3647-59 ft, sand 3659-61 ft, complete 35,000,000 cu ft. Saxet Oil Co.'s Rachal 18, White Point, J. N. Seguin sur, dr 2212 ft.

STARR COUNTY—Hooks & Weaver's Kelsey Baas 3, blk 2, sur 6, Sub of Porcion 75-76-77, Jurisdiction of Camargo, Olmos pool, sand 515-35 ft, set csg, woc. Los Olmos & G. Co.'s Kelsey Bass 6, blk 5, sur 5, Olmos pool, sand 335-39 ft, bail some oil; Kelsey Bass 7, blk 5, sand 348-63 ft, set 6⅝ inch csg 345 ft, wait on cement. San Marcos Drlg. Co.'s (Lon Smith) Ivey 2 (Kelsey Bass) 800 ft s No. 1, sur 8, sub of Porcion 75-76-77, sand 200-4 ft, test 108,000 cu ft gas. R. B. Suttles San Roman 1, Porcion 110, dr 250 ft. Jess Williams 1 Welsh 1, Pedernal Grant, lcn.

TRAVIS COUNTY — Fritz Fuchs' A. F.

Mines Report Describes Crudes From East Texas

The results of analyses of crude oils from wells in the newly developed Joiner, Kilgore, and Longview fields of Rusk and Gregg Counties in the East Texas district and from the Van field of the East Central district of Texas are given in a report just made public by the United States Bureau of Mines.

The four samples of crude oil from these fields are all typical "intermediate base" crudes. All four samples have the same general characteristics. Each contains a small proportion of sulphur (average 0.28 per cent). The "total gasoline and naphtha," according to the Bureau of Mines method of interpretation of the analyses, averages 36.0 per cent, the kerosene distillate 9.6 per cent, the gas oil 15.1 per cent, the non-viscous lubricating distillate 9.7 per cent, and the medium lubricating distillate 6.2 per cent. The gas oil appears to be a good stock for the production of gasoline by cracking processes, and the lubricating distillates appear to be similar to distillates of the same ranges of viscosity obtained from Burbank, Oklahoma, crude, which is generally recognized as a high-grade crude.

Further details are given in Report of Investigations 3130, by E. L. Garton, junior chemical engineer, copies of which may be obtained from the United States Bureau of Mines, Department of Commerce, Washington, D. C.

Smith 1, Kimbor sur, lcn. C. R. Franklin's J. Wilson 1, A. Alexander sur, dr 1145 ft. Henze & Ray's J. M. Hatch 1, center S. Hamilton sur, sd 375 ft. Bass & Fuch's R. A. Chadwich 1, A. C. Caldwell sur, dk. Waldron et al's T. Cook 1, D. H. Minor sur, dr 1465 ft.

VICTORIA COUNTY—C. R. & M. Co. & C. B. Bunte, Inc.'s, C. R. Keenan 1, center 2500-acre ranch, M. Leon sur, dr 3020 ft. Houston Oil Co.'s Konrad 1, T&NO sur, on Beck Salt Dome, n Victoria, td 5215 ft, pump 465 ft cement in hole to stop heaving shale. The Texas Company's McFadden 3, John M. Rine sur, nw No. 2, coring 5100 ft.

WEBB COUNTY — Carolina Texas O&G Co.'s Barnsley 10, Blk 14, sur 268, Carolina-Texas field, ru. Usher Carson's Webster 5, sur 684, Carolina-Texas pool, sand 3026-50 ft, set 4½ inch csg 3026 ft, swab 100 bbls oil, 47 gravity, 650 ft mud in hole. Cole Pet. Co.'s (Carson Benavides 2 (4) 12 mi e Laredo, sur 1601, sd 4050 ft. Fansler, Johnson & Peacock's Laurel 1, Blk 10, sur 271, Carolina Texas pool, sd 100 ft. O. W. Killam's Bruni 1, sur 445, lcn; Bruni 22, sur 9, Mariano Arispe grant, Cole field, dr 2497 ft. S. N. Johnson 2, sec 1618 Reiser district, dr 1930 ft. Geo. S. Marshall's Benavides 1, Carolina-Texas district, sur 683, lcn. Power & Detterheim's Cowan & Goss 1, sur 1606, sd 100 ft.

WILLIAMSON COUNTY — Burns et al's Wilder 1, H. Owens sur, dr 100 ft. H. Fritz et al's fee 2, HT&B Ry. sur, 3 mi sw Taylor, 35 ft n No. 1, abn 1115 ft. Hays and Gee's E. G. Johnson 1, B. C. Low sur, s Georgetown, dr 1582 ft. McLean et al's Miller 1, Manlove sur, sd 1670 ft. R. S. Wilson's J. S. Speckels 1, J. Jordan sur, 1 mi n Coupland, sd 890 ft.

WILSON COUNTY — August M. Blume's Nickelson 1, G. Diaz sur, 2½ mi s Floresville, sd 1600 ft.

ZAPATA COUNTY—Bob & Richey's Martinez 25, Charco Redondo pool, Blk 24, W. R. Duke sub, Charco Redondo Grant, lcn; Martinez 26, Blk 24, lcn; Martinez 27, Blk 24, lcn. Ballard & Mercer's Flores 1, Blk 27, Marks sub of Porcion 37, dr 350 ft. E. K. Bateman's M. Garza Estate 1, blk 29, sub of Zorro ranch, Los Comitas Grant, s end of Muckelroy pool, dr 1000 ft. Claggett's Cuellar 1, Martinez pool, ru. Geo. M. Gier's M. Garza Estate 1, Blk 18, C. A. Douglas sub, Comitas Grant, Muckelroy pool, ru. Grayburg Oil Co.'s C. F. Martinez 1, sec 4, Jennings pool, dr 1100 ft. O. W. Killam's Cuellar 46-B, sur 277, Cuellar pool, dr 1480 ft; A. Bustamante, 10, Blk 10, share 5, Fansler Partition Comitas Grant, Muckelroy pool, ru. Lowe, Rogers et al's Benavides 3, Blk 16, sur 11, 3000 ft ne No. 2, ru. Pray and Chamberlain Prod. Co., Inc.'s, (Whicker) Garza 1-C, sub of Zorro ranch in Los Comitas grant, s extension Muckelroy pool, dk. Shankle-Murray's F. Cuellar 2, blk 5, sur 61, Martinez pool, dk. South Texas Prod. Co.'s (United) Measles 10, sur 207, Jennings pool, dr 1000 ft. S. R. & C. Oil Corp.'s Trevino 5-E, Muckelroy pool, ru. C. J. Webster Oil Co.'s P. B. Trevino, lcn. Winch and Billings' Bustamante 2, share 35, Fansler Partition, Comitas Grant, sand 1468-73 ft, set 6⅝ inch csg 1468 ft, wait on cement.

EAST TEXAS

HARRISON COUNTY — Ryan Cons. Pet. Corp.'s J. M. Furrh 1, T. J. Copelain sur, rig. J. M. Gholson's Bivins 1, T. D. Peterson sur, sd 3085 ft. Lloyd Oil Corp.'s Timmons 1, Jno. Findley sur, 10-inch 240 ft, dr 4025 ft lime and shale.

MARION COUNTY—Rondeau & Hindman's Lindsay 1, Alex Albright sur, sd 2450 ft. J. W. Hamilton's Wood 1, Alex Albright sur, sd 2380 ft. Claunch et al's Laun 1, Henry Fulgram sur, sd 300 ft. Sheldon et al's Brown 1, E. B. Fowler sur, sd 3750 ft.

PANOLA COUNTY—Dillon & Bradham's Baldwin 1, Hampton West sur, sd 1555 ft. United Prod. Corp.'s Steele 17, B. C. Jordan sur, lcn (Trinity test); Werner 11, D. B. Lewis sur, 15½ cas 383 ft, 9-inch 3525 ft, top Washita 2190 ft, top anhydrites 4150 ft base, 4625 ft tested dry through ds 4630-94 ft, dr 4862 ft lime and shale. Daisy O&G Co.'s Rucks Hrs. 1, Jno. Palmer sur, sd for water 3264 ft, shale. Moses & Wallace's C. L. Daniels 1, Isabel Hanks sur, sd 650 ft. Hoffer et al's Cameron 1, W. A. Lagrone sur, dk. Davidson et al's Latham 1, Wm. Rich sur, 10-inch 260 ft, sd 1548 ft shale. Nelson et al's Williams 1, Jas. Hanks sur, 12½ cas 400 ft, sd 2250 ft lime. Stamps et al's Chadwick 1, Wm. Scantleberry sur, rig.

SHELBY COUNTY—E. L. Chapman's Holt 2, Matthew Moore sur, heavier rig installed, arr res, td 3127 ft; Pickering Lbr. Co. 1, C. F. Henry sur, blew out est 25 mil ft gas, 5 3/16 cas 3102 ft, td 3864 ft. McRobie et al's Windham 1, Wm. Leach sur, 296-ac tract, 12½ cas 276 ft, top chalk 1930 ft, 8¼ cas 1750 ft, bailed dry slight gas show, 2282 ft in chalk, base chalk 2572 ft, cored sand showing oil 2686-92 ft, bailed dry, slight gas show, arr deepen, td 2704 ft, sandy shales. Maulding et al's Frost Lbr. Ind. 1, A. B. Fountain sur, top PG 2900 ft, sd 3246 ft. H. H. Gracey's J. A. Morrison 1, Wm. English sur, sd 2600 ft. C. H. Tautenhahn's J. C. Bogard 1, Thos. Baker sur, sd 20 ft, partly rigged up. Ridgeway et al's Polley 1, Domingo Gonzales sur, 10-inch 112 ft, trying kill fresh water flow, td 822 ft. K. H. Francis' Jno. Mims 1, Mary Smith sur, top Midway 847 ft, sdtr ds at 2000 ft, sd 2750 ft, old td 2805 ft. United North & South Prod. Co.'s Windham 1, A. H. English sur, 171.5 ac tract, 12½ cas 376 ft, top PG 2004 ft, base PG 2602 ft, top AC 3198 ft, dr 3220 ft. Harry Elliott's Pickering 1, 361-ac tract, C. H. Patterson sur, sp arr set surf cas.

OKLAHOMA

GRANT COUNTY—T 25n, R 4w, Sec. 22, Cowden, Collmer 2, ne c se ne sw, sd 5640 ft, tools in hole.

ALFALFA COUNTY—T 24n, R 11w, Sec. 14, J. V. Bailey et al, Acre 1, c sw ne, sd 5502 ft.

GARFIELD COUNTY—T 24n, R 6w, Sec. 9, Pulse & Beamer, White 1, se c nw, sd 5850 ft, fsh job.

BLAINE COUNTY—T 19n, R 10w, Sec. 13, Washoma Pet. Co., Phillips 1, c nw sw, td 5120 ft, to abn.

LOGAN COUNTY—T 18n, R 3w, Sec. 33, Healey et al, Quier 1, se c sw, sd 3970 ft.

PAWNEE COUNTY—T 23n, R 5e, Sec. 15, Cochran et al, McFadden 1, ne c sw, rig. T 20n, R 5e, Sec. 6, W. A. Rookstool, Berry 1, nw ne sw, show gas 1942-1951 ft sd.

LINCOLN COUNTY—T 17n, R 5e, Sec. 36, W. M. Mote et al, School land 1, nw c dr 910 ft. T 14n, R 3e, Sec. 2, Hilton Phillips et al, Phillips 1, sw c nw, dr 3720 ft.

CREEK COUNTY—T 14n, R 7e, Sec. 18, Cal Cul Oil Co., Holleyman 1, se c ne se, spd and sd.

OKFUSKEE COUNTY—T 12n, R 10e, Sec. 3, Shepperd et al, Shepperd 1, se nw sw, 3692-3710 ft td, water, D&A.

PITTSBURG COUNTY—T 9n, R 16e, Sec. 32, Pattison et al, McDuff 1, sw nw se, dr 5813 ft. T 7n R 14e, Sec. 34, Tape Oil Co., Fulton 1, se c, sd 1200 ft.

LATIMER COUNTY—T 6n, R 19e, Sec. 16, P. English et al, Weaver 1, c nw se, sd 1542 ft.

ATOKA COUNTY—T 1n, R 13e, Sec. 31, T. J. Campbell et al, Baird 1, nw ne sw, machine. T 1n, R 15e, Sec. 6, Edgerton et al, Rolland 2, sw ne sw, machine.

OKLAHOMA COUNTY—T 12n, R 4w, Sec. 17, C. F. Cuniff, Trustee, St. Joseph 1, sw c ne sw se, sd 6700 ft.

SEMINOLE COUNTY—T 10n, R 6e, Sec. 19, Bunte et al, Bruner 1, se c nw, rig.

ROGER MILLS COUNTY—T 12n, R 24w, Sec. 23, Ute Oil Co. et al, Williams 1, c sw, sd 5150 ft. T 11n, R 26w, Sec. 4, J. J. Rook and Palmer, Davis 1, c nw ne (owd) sd 3240 ft.

CANADIAN COUNTY—T 10n, R 6w, Sec. 1, J. V. Bailey et al, Robinson 1, c ne nw, sd 150 ft.

WASHITA COUNTY—T 8n, R 19w, Sec. 29, Cooper and Terhune, Blocker 1, nw c, dr 2638 ft. T 8n, R 18w, Sec. 21, Burns & Prince, Dock 1, sw c, sd 1106 ft.

GREER COUNTY—T 7n, R 22w, Sec. 1, Good & Dowell, Cliffel 1, nw c, sd 1745 ft. T 7n, R 21w, Sec. 23, H. A. French et al, Murphy 1, sw nw se, sd 1654 ft.

COMANCHE COUNTY—T 4n, R 12w, Sec. 33, Snodgrass et al, Willetts 1, ne c nw, dr 295 ft.

GARVIN COUNTY—T 2n, R 2w, Sec. 24, Malernee, Phillips 1, ne c sw, sd 4800 ft.

MURRAY COUNTY—T 1n, R 2e, Sec. 6, Capital P&R, Cutchall 1, se c ne, sd 2432 ft.

COAL COUNTY—T 1n, R 8e, Sec. 35, W. E. McCraw, Stiring 1, ne c se, sd 1846 ft. T 1s, R 8e, Sec. 2, Rabiel Oil Co., Richardson 1, ne c nw, sd 1165 ft.

ATOKA COUNTY—T 3s, R 10e, Sec. 18, Brookshire et al, Quinn 1, nw c, sd 1540 ft.

LOVE COUNTY—T 6s, R 2e, Sec. 27, Batson et al, Cross 1, ne c nw ne, 1632 ft, co.

BRYAN COUNTY—T 7s, R 10e, Sec. 8, Bryan Oil Co., Childs 1, ne se sw, sd 660 ft.

KANSAS

(Wells whose status have not changed since Nov. 2, are omitted.)

SUMNER COUNTY—Spencer et al, Porter 1, ne sw, 12-33-4w, td 4105 ft, rng 6-inch.

FINNEY COUNTY — National Ref. Co., Wells 1, sw c, 13-23-30w, dr 1800 ft.

HARVEY COUNTY—Flannigan, Sheridan 1, c sw, 32-22-1e, sil. 1.3606 ft, dr 3948 ft.

BARTON COUNTY—Syndicate Oil, Boertz 1, c nw se ne, 13-18-12w, td 3070 ft, ur 6-inch.

CHASE COUNTY—Borden et al, Atkinson 1, nw se, 18-18-7e, spd 50 ft and abn.

MORRIS COUNTY—Urschel et al, Bersuch 1, c nw se nw, 10-17-7e, td 915 ft, fsh bit.

RUSSELL COUNTY — Austin Drlg. Co., Rockefeller 1, se c 6-13-12w, td 3657 ft, D&A.

SALINE COUNTY—Twin Mounds, Weis 1, c w½ ne nw 20-13-4w, sd 2710 ft.

SHERIDAN COUNTY — Flo et al, Shoemaker 1, se sw sw, 27-27-26w, td 3655 ft, ur 6-inch.

NORTHERN CALIFORNIA

KERN COUNTY

ANTELOPE PLAINS—Meridian Oil Co.'s No. 1, 11-9-15, dr shale 3925 ft.

BLACKWELL'S CORNER—Signal Oil and Gas Co.'s Lincoln 1, 15-26-19, sd 100 ft.

BUTTONWILLOW — Graham-Loftus Oil Co.'s Carmel 1, 20-27-22, 9-inch cas cmt 4768 ft, td 4782 ft. Milham Exploration Co.'s Crites 1, 8-28-23, perforated liner below 9⅝-inch, shutoff at 3527 ft, very little gas.

DEVIL'S DEN—Cumberland Oil Co.'s Cumberland 2, 17-26-18, sd 2835 ft.

LOST HILLS—General Pet.'s No. 1301, 13-26-20, sd 4399 ft. Lincoln Pet.'s Theta 1A, 12-26-20, co 5328 ft, some oil and gas.

SEMITROPIC — Fullerton Oil Co.'s Core Hole 1, dr shale 785 ft.

WEED PATCH—Osborn & Colter's Duff 2, 15-30-29, pulling liner, td 1978 ft. Sy Wicker's No. 6, 12-30-28, dr shale 3865 ft.

SANTA BARBARA COUNTY

GOLETA—General Pet.'s More 3, 22-4-28, plugging back from 6912 ft, may redrill after shot of 4¾-inch cas at 5272 ft. Ohio's Oakley 1, 16-4-28, dr shale 5535 ft. Strickland and Tippett's Duncan 1, 19-427, repairing pipe 4885 ft, may deepen.

SANTA MARIA—Western Gulf's Bradley 1, 5-9-33, dr shale 8010 ft.

VENTURA COUNTY

HOPPER CANYON — Bardeen Oil Co.'s Lankershim 1, 13-4-19, will deepen from 1799 ft after pump test.

RINCON—Continental's Grubb 1, 23-3-24, co 6640 ft, water shutoff approved with 9⅝-inch cas at 6472 ft.

SANTA PAULA — San Pedro-Pt. Fermin Synd.'s Kellerman 1, 13-4-21, dr shale 3625 ft.

SOUTH MOUNTAIN—H. H. Bell's Lemon 1, 22-3-21, dr shale 1175 ft, gas showings but no oil in cores.

MISCELLANEOUS

FRESNO COUNTY—Kingsburg Exploration Co.'s Muller 1, 30-16-23, rigging rotary.

KINGS COUNTY—Knudsen and Schmidt's No. 1, 36-23-17, sd 4305 ft. Eagle Oil and Gas Co.'s No. 1, 15-23-20, rigging up rotary. Irma Investment Co.'s Watson 1, 7-23-20, rig. Kettleman Lakeview Oil and Gas Co.'s No. 1A, 20-23-20, will deepen from 1170 ft, now sd. Lacal Natural Gas Co.'s No. 1, 32-22-20, rigging rotary. Valley Exploration Co.'s Dudley 1, 12-23-19, sd 1278 ft; Veco 7-12, completed as small gas well and shut in, td 1141 ft.

MERCED COUNTY—San Joaquin Exploration Co.'s No. 1, 36-10-9, lcn.

MENDOCINO COUNTY—Twin States Oil Co.'s Soldani 1, 14-12-17, sd 7694 ft.

MONTEREY COUNTY—Pacific Inland Oil Co.'s No. 1, 19-23-15, dr 1465 ft.

SAN LUIS OBISPO COUNTY—Kent and

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BAILER BOTTOM

will speed up production in cavy holes by time saved in picking up cuttings.

STAR BOTTOM

used for cutting the sand loose and preferred by some to the Chisel Bottom.

SAND PUMP

Bottom illustrated in position in the pump.

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McDonald's No. 1, 3-32-22, dr shale 2285 ft. Central Coast Investment Co.'s No. 1, 1-28-12, co 940 ft. Emerich Oil Corp.'s No. 1, 13-28-12, lcn.

STANISLAUS COUNTY—Bud Hillebrants No. 1, 35-6-7, rig.

TULARE COUNTY—E. B. Guess' No. 1, 7-21-21, fsh for drill pipe 6197 ft. Ellis and Sanford's No. 1, 20-24-23, dr shale 1935 ft.

SOUTHERN CALIFORNIA

ALHAMBRA—Yellowstone Oil Co.'s Huntington 1, 24-1-13, redrilled to 2900 ft, sd; Construccio 1, 19-1-12, co 2015 ft.

CALABASAS—L. W. Rucker's No. 1, 26-1-17, dr shale 690 ft. Simi Oil Co.'s Hearst 1, 18-1-17, dr shale 3300 ft; Hearst 2, 18-1-17, dr surface sand 200 ft.

FULLERTON—Standard Oil Co.'s Bastanchury 1, 21-3-10, co 5885 ft, td 8144 ft, will continue production test of upper showings.

LYNWOOD—William L. Jones' Graham 1, 31-2-12, rigging up rotary.

MONTEBELLO — Wardell and Menichin's No. 1, 7-2-11, lcn.

MONTEREY PARK—Celito Oil Co.'s Jepson 1, 25-1-12, sd 5217 ft, will deepen.

NEWHALL—O. C. O. Oil Co.'s Wilmon 1, 14-3-13, dr shale 1200 ft.

NEWPORT—Ajax Pet. Co.'s B. G. 1, 16-6-10, dr shale 5848 ft. Nuoil Co.'s Gessell 2, 29-6-10, will deepen from 1940 ft. Orange County Refining Co.'s No. 5, fsh for liner 1224 ft. Superior's Irvine 1, 27-6-10, dr hard sand 3434 ft.

OCEAN PARK—Hines Pet. Corp.'s Happy Days 1, 8-2-16, dr out cmt 7330 ft, 6⅝-inch cas cmt 6048 ft.

PLAYA DEL REY—Cooperative Development Co.'s No. 1, 26-2-15, rigging rotary.

ROSECRANS—Meyers and Majestic's Avalon 1, 19-3-13, lcn.

SAN FERNANDO—El Caballero Estates' No. 1, 23-1-16, fsh for cable tools 1440 ft. Mack Oil Co.'s No. 1, 6-2-16, dr 815 ft.

WILMINGTON—Ranger Pet. Corp.'s Watson 2, 21-4-13, dr shale 1900 ft.

NORTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
DESOTO PARISH—		
Keatchie O&G Co., Smith 1, 31-14-15	*	2295

BIENVILLE PARISH—Arcadia Drilling Co.'s Mason 1, ne sw 28-18-6w, 12½ cas 39 ft dr 1638 ft sandy shale.

BOSSIER PARISH — Andrews & Davlin's Nattin 1, 15-22-14, 4½ cas 2882 ft sd wo 2890 ft. Dr. Hankins et al's Newell 1, 12-19-11, sd 1255 ft. D. L. Perkins et al's Ardis 1, 13-15-11, top Nacatosh 944 ft sd 1004 ft.

CADDO PARISH—United Gas Pub Serv. Co.'s H. J. Bussa 1, 33-23-16, 12½ cas 375 ft 9⅝ cas 3625 ft dr 5000 ft anhydrites (5500 ft test). Pelican Nat. Gas Co.'s Cooper 1, 29-18-14, ta 3648 ft red shale and lime.

CALDWELL PARISH—Monroe Pet. Corp's Burton 1, 36-12-2e, sd acct titles 2986 ft. Carter Bell et al's Taylor 1, 17-14-4e, 12½ cas 110 ft sd.

DESOTO PARISH—Rellit O&G Co.'s Cannon Hrs. 1, 12-11-16, top chalk 1476 ft base 1810 ft 6-in cas set with Pckr at 1470 ft dry wo td 1965 ft. Keatchie O&G Co.'s Smith 1, 31-14-15, dry abn td 2295 ft gumbo (corrected depth). E. T. Oakes' Johnson 1, 30-13-15, base chalk 2160 ft top another chalk 2815 ft dr 3038 ft lime. Walters & Nicholson's Jim Guy 1, 3-11-13, sd 1266 ft.

LA SALLE PARISH—Gulf Ref. Co.'s Tremont Lbr. Co. 1, ne sw 10-9-2e, 15½ cas 105 ft 12½ cas 940 ft dr 4770 ft chalk rock.

NATCHITOCHES PARISH—Mid-West Prod. Co. Inc.'s Brown 1, 31-11-10, sp 10-in 40 ft dr 1118 ft. C. M. Talley et al's Talley 1, 29-11-10, sd 1380 ft. J. W. Cooper et al's Cooper 2-A, 35-11-10, sd 1515 ft. Gerson et al's Smith Island 1, sw nw sw 11-10-8w, sd 50 ft. R. A. Keator's Stephens 1, nw nw 25-10-6w, sp 12½ cas cemtd 178 ft.

OUACHITA PARISH—S. C. Wilson et al's W. L. Williams 1, sw se 5-16-1e, dk.

RED RIVER PARISH—Mack Jourdan Co.'s Lockett 1, 33-13-10, 6-in cas cemtd 2350 ft wosr td 2750 ft.

RICHLAND PARISH—National Gas Co.'s Singletary 1, 20-18-7e, sd 2515 ft.

SABINE PARISH—J. J. Kean's Belton 1, nw se ne 31-9-13, elev 233 ft 8-in cas 1590 ft at top chalk, bailed dry, wo 2039 ft chalk. H. W. Perritt's Bowman-Hicks 6, se ne 2-7-12, sp 10-in 100 ft dr 620 ft. A. H. Thames' Edwards Est. 1, 8-8-13, sd 1200 ft. R. L. Gay, Tr.'s Long-Bell A-1, nw nw 10-8-13, sd 3852 ft lime. Coates Pet. Co.'s Bowman-Hicks A-1, sw se 18-7-13, 6-in cas 2160 ft tested dry sd 2630 ft. Bowman-Hicks 1, ne sw 2-7-12, oil show in Wilcox 1670 ft top marl 2230 ft top chalk 2300 ft wosr 2441 ft. Stille 1, nw se 35-8-13, lcn. Hill 1, se se 35-8-13, lcn. Dengail Oil Co.'s Nulton 2, se sw ne 1-7-13, 10-in 103 ft 6⅝ cas 2063 ft top marl 2063 ft flowing est 200 bbls oil day thru 1/16-in choke, with 100 pounds back pressure, td 2067 ft wo gauge. Nulton D-2, nw ne 1-7-13, lcn. Ohio Oil Co.'s Bowman-Hicks 9, 35-8-12, lcn. Bowman-Hicks 10, 35-8-12, lcn. Bowman-Hicks 11, 2-7-12, lcn. Bowman-Hicks 12, ne ne 2-7-12, 10-in 221 ft 6⅝ cas 2208 ft wosr td 2271 ft. Bowman-Hicks 13, ne se 35-8-12, lcn. Diffie & Barrett's Lites 1, 34-8-11, 10-in 105 ft lacn abn will not deepen. Hudson & Bird's Walden 1, sw ne 26-8-11, 10-in 100 ft sd for water 1800 ft. Gerhig Co.'s W. F. Skinner 1, nw nw 16-8-11, 10-in 105 ft sd for water. Hawkins & Antoon's Newton 1, 1-7-11, wosr 2610 ft. L. K. McGuffin's Byrd 1, 1-7-11, sd 400 ft. Zeke Lohman's McCormick 1, ne sw 2-7-11, sd 1606 ft. Ben Merritt, Tr.'s Byrd 2, 1-7-11, 10-in 88 ft sd. Roy Baker's Sabine 1, 11-7-12, wosr 2548 ft. Gautier et al's Meshell 1, 30-8-12, wosr 2530 ft. Loring Oil Co.'s Bowman-Hicks 18, sw nw 15-7-12, 15½ cas 100 ft tested dry 4017 ft sr to set 9⅝ cas at 3950 ft td 4174 ft shale and lime. G. M. LeGrand's Peterson 1, sw ne 34-7-13, 10-in 40 ft claim 3 ft sand showing oil 2137.40 ft arr set 6-in cas. A. F. Tarver's Cutrer 1, 14-7-11, wosr 2550 ft. Cutrer 2, 12-7-11, lcn. Lyons & Neely's Byrd 3, 1-7-11, 10-in 100 ft sd 400 ft. Eddie Self's Jacobs 2, sw se 1-7-11, 10-in 100 ft arr set 6-in cas td 2464 ft. Stovall Drilling Co.'s Nulton 2, 1-7-13, 10-in 100 ft 6-in 2059 ft dry at 2282 ft dr 2420 ft chalk. O. J. Baird's Duggan 1, se nwse 14-7-11, 10-in 100 ft sd 2000 ft. Davidson & Grigsby's Martinez 1, nw se 2-7-13, rig. M. J. Kissick's Brown Lbr. Co. 1, nw ne 1-7-11, 10-in 100 ft dr 900 ft. Exchange Pet. Co.'s La. Long Leaf 1, ne nw 35-8-11, rig. W. F. Lacey's Kate Holliday 1, se nw 35-8-12, dk. Crescent Drilling Co.'s McClanahan 1, 4-7-11, dk. Pelican Nat. Gas Co.'s La. Long Leaf 11, ne nw 10-7-11, dk. W. W. Smith et al's Hale 1-7-13, rig.

TENSAS PARISH—A. R. Willis' Curry 1, 39-11-12e, sd 3545 ft. L. A. Duvall et al's Martin Jacoby 1, ne ne 1-14-10e, sd 3060 ft. Stovall Drilling Co.'s Miller 1, ne sw 18-10-10e, lcn.

MISSISSIPPI

CLARKE COUNTY (Quitman Dist.)—Gulf Ref. Co.'s Long Bell Lbr. Co. A-1, sw sw 10-2n-16e, elev 380.3 ft 15½ cas 105 ft 10-in 956 ft top Black shale 2290 ft top chalk 2633 ft top Eutaw 3673 ft 7-in OD cas 3685 ft 8-ft sand core 3692-3700 ft showed saturation heavy oil, showed heavy oil and sw when tested at 3700 ft dr 3942 ft gray and green sandy shale.

CHICKASAW COUNTY—Hightower & Golson's Fleming 1, 20-13n-3e, sd 1640 ft.

HUMPHREYS COUNTY — Danciger O&R Co.'s Bellgrade Lbr. Co. 1, nw nw 29-14n-4w, 10-in 659 ft dr 2805 black shale.

JASPER COUNTY, (Bay Springs Dist.)—Bay Springs Pet. Inc's J. H. Keyes 1, nw ne 21-2n-10e, sd 2360 ft Wilcox.

LAMAR COUNTY, (Purvis Dist.)—Stauffer and Kouri, Trs' Bond 1, se ne 18-2n-14w, dk.

LOWNDES COUNTY — Lowndes County O&G Co.'s Carr Est. 1, 34-17-16e, dk.

MONROE COUNTY, (Amory Dist.)—Amory Dev. Co.'s Bourland 1, 2-15-19, ta 3007 ft brown sand P. J. McAlpine's Cowart 1, 2-12s-19w, 5 3/16 cas 3420 ft dr 3787 ft lime. Associates Royalties' School Board 1, sw se 16-15-17, ta 60 ft.

NEWTON COUNTY, (Newton Dist.) — Dalton Dev. Co.'s Majure 1, se se 25-6n-11e, 10-in 295 ft sd 847 ft.

NOXUBEE COUNTY, (Macon Dist.)—Thompson O&G Synd's Donahue 1, se ne 25-16n-17e, elev 280 ft 12½ cas 20 ft 8¼ cas 1605 ft tested hf alkali water, sd wo td 1735 ft. Ames 1, nw nw 24-16-18e, dk pat.

RANKIN COUNTY, (Jackson Dist.)—Gulf Ref. Co.'s Hanna A-1, nw se 23-5-1e, 9-in 2565 ft base chalk 2934 ft dr 3044 ft gray sand. Atkisson & Dyer's Valentour 1, 18-5-2e, 12½ cas 60 ft sd 1538 ft. United Gas Pub. Serv. Co.'s McLaurin A-1, ne sw 8-5-2e, elev 284 ft

12½ cas 105 ft 9-in 854 ft top Wilcox 1218 ft top chalk 2513 ft base chalk and top red beds 2937 ft dr 3195 ft sandy lime. Majestic O&G Co.'s Elton Lbr Co. 1, 10-4n-3e, dk.

SCOTT COUNTY—Culley et al's Owen 1, 2-8n-9e, dk.

WARREN COUNTY, (Vicksburg Dist.)—Eagle Lake O&G Co.'s Kiger 1, sw ne 9-18-2e, sd 2607 ft. United Gas Pub Serv Co.'s Tchula Store 1, sw se 33-15n-3e, elev 83.8 ft 15½ cas 184 ft 10-in 855 ft top Claiborne 725 ft top Wilcox 3200 ft sr 3286 ft sandy shale.

WEBSTER COUNTY — P. J. McAlpine's Henley 1, se nw 15-21-11e, cored gravel, sd 1800 ft.

WINSTON COUNTY, (Louisville Dist.)—Miss. Drilling Co.'s Scarbrough 1, nw nw 15-13-14e, sd 4039 ft (corrected depth).

ALABAMA

MADISON COUNTY — Tennessee Valley O&G Co.'s Fee 4, 1-4s-2e, no report.

SUMTER COUNTY, (Livingston Dist.)—Forked Lightning O&G Co.'s Nixon 1, 30-20-2w, dk.

WASHINGTON COUNTY—Hobson et al's Wilson 1, 27-7-1w, arr res td 925 ft Wilcox. Hobson Bros. 1, 9-8-2w, ta 1450 ft. Oscar Brown's U. S. Land & Cotton 2, 25-3-2w, ta 700 ft.

TENNESSEE

CHESTER COUNTY—Gilmore et al's Scott 1, sp 15½-in hole with cable tools.

DECATUR COUNTY—Chester County O&G Co.'s Montgomery 1, sd 2511 ft (2500 ft contracted depth).

ARKANSAS

CLAY COUNTY—S. C. Jeffus, Tr.'s Underwood 1, 4-20-8e, sd 1260 ft.

CLEBURNE COUNTY—Donnell et al's Fee 1, 33-11-9, sd after testing sw 3515 ft.

CLEVELAND COUNTY — Crum & Stilwell's Bell 1, 10-10s-12w, rigged up and sd.

COLUMBIA COUNTY—Kendall Oil Co.'s Fullenwider & Kitchen 1, ne ne 13-17-22, 8¼ cas 800 ft, hole full fresh water, td 814 ft.

CRAWFORD COUNTY — Ozark Nat. Gas Co.'s Hammonds 1, se se 29-10-29, cemtd 6⅝ cas 1885 ft, dr 2004 ft.

DALLAS COUNTY—Zepp O&G Co.'s Hillman 1, 20-10-13, sd 2869 ft; W. E. Hillman 2, se ne 20-10-13, 10-inch 135 ft, 6-inch 2620 ft, ta 2688 ft, black shale; W. E. Hillman 3, nw ne 20-10-13, lcn. Jno. James, Tr.'s, Fordyce Lbr. Co. 1, 11-9s-15w, sd 2520 ft.

HOT SPRINGS COUNTY—Starr Oil Co.'s Cunningham 1, 11-5-16, 12½ cas 62 ft, sd 1262 ft shale and bldrs.

JOHNSON COUNTY—Blackwell O&G Co.'s Wyver 1, 21-8-23, ta 5600 ft.

LINCOLN COUNTY — L. B. Cook, Tr.'s, McGehee Pltg. Co. 1, 5-8s-7w, sd 2800 ft.

LITTLE RIVER COUNTY—Geo. Stephens et al's Dierke Lbr. Co. 1, ne nw 29-12s-31w, dk. Fay Roberts Oil Co.'s Russell 1, 25-12-29, lcn.

LOGAN COUNTY—M. W. Greesom's Parks 1, 21-8-24, sd 1309 ft. J. H. Flowers' White 1, 13-5-26, sd 3610 ft.

MILLER COUNTY — W. E. Noel et al's Dickson 1, 11-20-27, sd 1955 ft shale and gumbo. Fitzwater et al's E. L. Beck 1, sw se 33-15-26, 10-inch 85 ft, sd 2220 ft.

OUACHITA COUNTY—W. H. Copenhaver et al's Berg 1, se se 13-15-17, 10-inch 42 ft, dr 1810 ft.

PIKE COUNTY—Henderson et al's Tilyou 1, 26-8-24, ta 2920 ft. Kentucky-Ark. O&G Co., Inc.'s, East 1, 13-9-23, 10-inch 288 ft, hole full fresh water, wo, td 709 ft.

PRAIRIE COUNTY — Powell Creek O&G Co.'s Kloss 1, ne sw 3-4n-6w, partly rigged up and sd.

SCOTT COUNTY — Heavener O&G Co.'s Reser 1, 36-4-26, sd 1536 ft. Waldron O&G Co.'s J. G. White 1, 17-3n-29w, sd 1860 ft, (sec. hole).

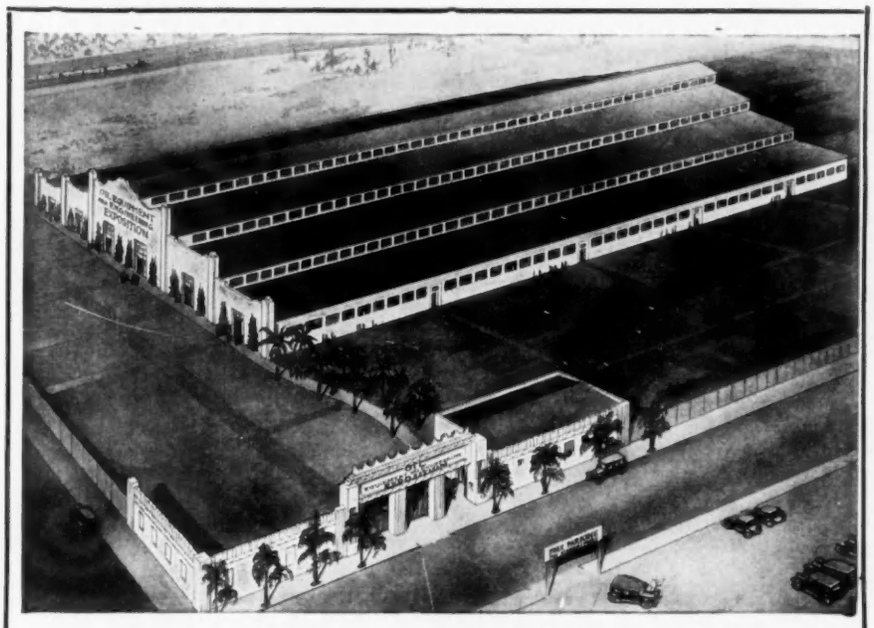
SEBASTIAN COUNTY—M. W. Greesom's Spears 1, 9-7-29w, sd 1536 ft.

SEVIER COUNTY—Tri-State O&G Co.'s Bank of DeQueen 1, 34-8s-32w, rig.

UNION COUNTY — Southern Prod. Co.'s Wingfield 1, 16-19-15, sd 2608 ft. Lion O. R. Co. et al's Guy P. Hayes A-9, ne ne 4-16-15, elev 96 ft, mudding up, td 6214 ft (6000 ft test). Drillers Oil & Dev. Co.'s Pickering 1, 1-17-16, cored 6 ft cap rock and oil sand 2128-34 ft, drilled plug missed core, plugged back one ft, sd wo cement to set, td 2133 ft. Joe Modisette et al's Webb 1, nw se 6-18-13, 10-inch 137 ft, tested 1 mil ft gas through ds 2503-32 ft, tested 20 fourbles sw in 5 minutes, 2636-45 ft, dr 2780 ft.

WASHINGTON COUNTY—Lincoln Lease Holding Synd.'s Townsite 1, 3-15-32, ta 1500 ft. C. H. Willoughby's Jones 1, 34-16-30, sd 2150 ft. O'Hara & Shetterley's Boyd 1, 2-16-32, ta 650 ft. Delbert Graves' Cunningham 1, 14-15-32, sd 602 ft gray sand.

YELL COUNTY—T. Luckett's Balcon 1, 36-7-12, sd 5710 ft.



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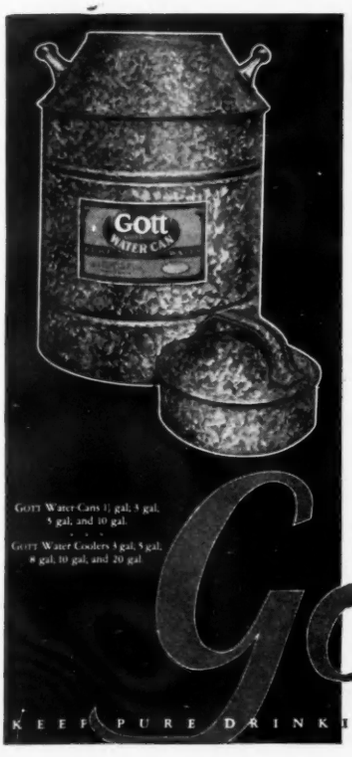

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NEW MEXICO

BERNALILLO — Norrins Realty, Pajarito Grant, 22-9n-2e, dr 8460 ft.

DE BACA—Saldo Dome Oil Corp., sw 6-4n-20e, dr 3204 ft. Landowners Oil Co., State 1, ne 16-1s-27e, dr 4630 ft.

EDDY—Western Drlg. Co., nw 29-17-29, dr 710 ft in anhydrite and brown shale.

DONA ANA— Viking O. & Dev. Co., 1, nw 26-23-5e, fsh 3065 ft.

GUADALUPE—N. M. Prod. & Ref. Co., McMillan 1, 24-5n-16e, run 12½-inch to sow. 2600 ft.

LEA—Pacific Coast Oil Co., Blakey 1, nw 28-19-38, sd wait orders.

LUNA—Angelus Oil Mining Ass'n 1, se 20-21s-10e, co 6171 ft.

OTERO—Ernest et al's se 20-26s-7e, fsh tools 1251 ft. Pasotero Oil Corp., Evans 1, sw 22-24s-12e, stand 1375 ft.

RIO ARRIBA—Berrenger et al's Hartman 1, ne 8-29n-7w, sd 825 ft. San Juan Pete Co.'s Gov't 1, se 14-30n-7w, stand 380 ft. Governador Oil Co.'s 1, 12-29n-7w, dr 1800 ft last report.

ROOSEVELT—Peterson et al, Good 1, ne 32-5s-30e, ready to spud.

SAN JUAN—Kutz Canon O&G Co., Day 1, se 20-28n-10w, dr 3670 ft. Rio Grande Dev. Co.'s 2, 9-29-11, ur cas 1771 ft. Continental Oil Co.'s Rattlesnake 24, 1-29n-19w, sd 6063 ft. San Juan Leaseholds, Bowman 3, ne 30-30-15, sd 2685 ft. R. C. Oswell et al, nw 34-30n-11w, stand 1414 ft. Wms. et al., Stallings 1, sw 17-25n-15w, stand 150 ft. Ortega et al, Westwater 2, ne 24-31n-18w, co 2190 ft, td 2460 ft. Dorothy Oil Co.'s Terwilliger 2, se 29-30-9, sd 1750 ft.

SANTA FE—Jones, Owsley et al, 5-10n-19e, dr 266 ft. Barton Ass'n, sw 6-10n-7e, dr 140 ft.

SAN MIGUEL—Starr Oil Co., Adams 1, ne 25-17n-16e, to ur 5 3/16-inch to 5030 ft.

TORRANCE—Estancia Valley Carbon Dioxide Dev. Co., DeHart 2, se se 12-7n-7e, stand 495 ft. Fisher et al, 6-10n-7e, dr 254 ft.

MONTANA

CARBON—Corbett Roy. Co., sw se 1-6s-23e, dr bel 450 ft. Jack Creek Oil Co., 1, se 15-7s-23e, td 1325 ft, last report. Ohio Oil Co., Kuchinski 1, 15-7s-21e, mvg in.

CARTER—E. T. Moorehead, sw 36-4s-57e, dr 100 ft.

CASCADE—Buscher & Cassady, Johnson 1, se 19-22-3e, set pipe past lost tools at 1010 ft. Charles Merz et al, Sheffelt 1, sw 4-21-4e, dr bel 325 ft.

GALLATIN — Mont. Gas & Pete. Corp., Adams 1, 35-1n-2e, spd. Gallatin Valley Oil Co., nw 1-1-4, dr 650 ft.

FERGUS—Melton Corp., 1, sw 24-21n-17e, dr 3050 ft. Landheim-Romunstad 2, ne 3-17n-20e, set 6⅝-inch at 2116 ft, dr 2575 ft.

GLACIER—Fulton Pete Corp., Blackfeet 1, ne 28-38-12w, dr 2770 ft. Browning Dev. Co.'s Reickhoff 1, ne 3-34-6w, rigged. R. C. Tarrant et al, Haglund 1, sw 13-34-6w, dr 2200 ft.

GOLDEN VALLEY—Golden Valley Oil Co., 28-6n-22, to res 1140 ft.

LIBERTY—Peoples O&G Co., First Nat'l Bank 1, ne 17-36-6e, sd 2000 ft. California Co.'s Utopia 1, se 11-33-6e, abn 3310 ft. Northland O&G Corp., Yurman 1, sw 32-33-5e, sd 3705 ft, wait cas. California Co., Ross 1, ne 3-33-6e, rigging up.

ROSEBUD—Prairie O&G Co., 1-XX, 26-10-39e, abn 4555 ft.

SWEETGRASS—Shoshone Cons., nw 23-2n-15e, straightreaming around 5500 ft.

TETON—Andover Oil Co.'s Carlson 1, 5-24-4w, stand 150 ft. California Co.'s Sullivan 1, nw 34-27-7w, dr 2370 ft. Earl Oil Corp., Gad 1, se 22-22-8w, cem to 3740 ft.

TOOLE—Liquid Gold Oil Co.'s Elbert 1, ne 25-36-12, to run 5-inch to s.o.w. 2480 ft. Oregon Oil Synd., se 20-36-2e, ur pipe to carry to 1710 ft. Western Natural Gas Co., nw ne 26-37-4w, lcn.

YELLOWSTONE—Pan American O.l Synd., 23-2s-24e, below 2360 ft. Peter Antonioli 1, ne ne 21-2n-25e, dr 2150 ft, 10-inch hole.

WYOMING

CARBON—Midwest Refining Co., U. P. 27, 27-11-81, dr by bit at 3945 ft. Prairie O&G Co., Bunker Hill 1, 29-27-87, fsh 6122 ft.

CONVERSE—John Ackard, se 24-33-72, dr 1685 ft.

CROOK—Northwest O&G Co., 6-54-60, dr 1585 ft.

FREMONT—Wiebolt et al, 35-33-99, dd from 1850 ft. Ward O&G Co., 28-34-90, 10M gas show at 2530 ft., co to dr deeper.

LINCOLN—Wyo. Prod. Co., 14-24-113, bottomed at 1700 ft.

NATRONA — Midwest's 11, nw 32-34n-77,

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stand 5340 ft. Midwest's Midway 1, ne 23-35n-79w, bailing at 3800 ft, td 5192 ft. Summit Oil Co., 21-33-80, set cas 1387 ft. Wyo. Imperial Oil Co., se 13-33-79, rig up.

NIOBRARA—Globe Pete Corp., 2-39-61, td 248 ft, last report.

SHERIDAN—R. & D. Oil Co., 21-57-87, dr 1230 ft, last report.

SWEETWATER—Vermillion O&G Co., sw sw 16-12n-99w, ur 8¼-inch at 4685 ft.

UINTA—Doheny interests, 6-14-118, dr 3992 ft.

WASHAKIE—Ohio Oil Co., lot 14, 19-45-92, dr 8350 ft, headed for the Muddy. Bales Oil Trust, nw 31-48-80, spd and set surface pipe.

WESTON—LeFaivre Oil Synd., se 29-45n-68w, td 1400 ft. Julius Peters et al, Witzell 1, se nw 30-46-64, dr 3200 ft. Stockade Anticline Synd., 32-45-60, dr. Gose Oil Synd., Gose 1, 28-47-65, dr 5050 ft.

COLORADO

ADAMS—Hills Dome Lease Dev. Co., se 27-38-64, dr 3750 ft.

ARAPAHOE—McDeb Drlg. Co., Fitzsimons 1, ne 7-4n-68w, td 5811 ft.

BOULDER—C. T. Ahlstrand's Woodley 1, ne 8-3n-70, prep to case, td 505 ft. Julius Williams, 6-1n-71w, dr 362 ft. Independent O&R Co., Blair-Winter 1, nw 25-3n-71, abn.

ELBERT—Belmont Oil Co., sw 27-3s-64w, dr 3742 ft.

EL PASO—Gulf States Oil Corp., Cannon 1, ne 10-16s-66w, prep to res at 1125 ft.

GRAND—Oil Mineral Lands, Inc., McElroy 1, sw 14-2-81w, stand 545 ft.

JEFFERSON—Ruby Hill O&G Co.'s Braden 1, se 24-4s-59w, run 6⅝-inch at 4100 ft.

LA PLATA—McGarr Pete Co.'s Pinon Mesa 1, ne 34-33n-12, rig up. Klem Pete Corp.'s Olbert 1, se 9-26n-12w, stand 3125 ft. J. W. Irwin & Co., Doescher 1, nw 29-33n-12, dr 3155 ft. Phipps et al, nw 9-33-13, dr 470 ft last report.

LARIMER—Mayer Oil Co., No. 1 Reed, nw 28-4n-69, co, td 2400 ft. P. J. Mosher, Inc., sw se 17-4n-69, dr 740 ft. Colorado Producers, Inc., Foster-Motz' Reservoir 1, se se 17-4n-69, dr 1000 ft. Consolidated Drlg. Co., Maxwell 1-A, ne ne 25-8n-70, pulled 12½-inch and rerun. Stanley M. Barrows' Munroe 1, nw ne 26-11n-69, to res at 1050 ft. Raddatz-Travis Corp., 1, ne 7-4n-69w, 10-inch cas at 550 ft.

LINCOLN—Eastern Colo. Oil Corp.'s State 1, 36-14n-57w, fsh 3425 ft.

MOFFAT—Ohio Oil Co., Bogenschultz 1, se 9-6n-91, mvg in.

MORGAN—Ind. Terr. Illum. Oil Co., State 1, ne 16-1n-57w, fsh cas 5912 ft, td 5920 ft. Badger Creek O&G Co., sw 2-2n-57w, stand 1420 ft. Colo. Ass. Oil Co., Pumphrey 1, se 14-4n-58, show 3M gas, td 5845 ft. Tulsa-Fort Morgan Oil Co., Smith 1, nw 18-6n-60w, lcn. Prairie O&G Co., Mortier 1, nw 2-5n-60w, dr 5690 ft. Juhan et al, Kent 1, sw 2-2n-57w, dr with hfw. Myers et al, Lee & Lusby 1, sw 6-2n-56w, dr water well.

PUEBLO—Anchor Oil Co., Esely 1, sw 35-22-67, dr 790 ft.

PARK—South Park O&G Co., Milligan 1, se 13-8s-76w, run cas 2606 ft. South Park Oil Co., Esche 1, ne 5-9s-76w, prep to run 6¼-inch at 2465 ft.

RIO BLANCO—California Co.'s Raven 1, se 20-2n-102, dr 2992 ft. Magnolia Pete Co.'s Maddock 1, se 9-2s-96w, dr 1804 ft.

ROUTT—Mid-Colo. Pete Corp., Omholt 1, ne 29-4n-87w, dr 1340 ft, gas showing.

WASHINGTON—Frank E. Kistler's Middlemist 1, se 14-4-56, stand with 12½-inch set at 1503 ft.

WELD—Reiter-Foster's Johnson-Juhl, 14-6n-61w, sd 6700 ft, wait for orders. Reiter-Foster's Wilson 1, se 24-6n-61w, dr 500 ft. Aztec Corp., State 1, se 16-6n-61w, 15½-inch cem 115 ft. Retter Oil Co., Smith 1, 14-1n-68w, fsh 12½-inch at 1377 ft. Conoco, Gadbois 1, sw 24-6n-61w, fsh, td 6593 ft. Greeley Oil Co., Gadbois 1, 1-B, nw 25-6n-61w, dr 5600 ft. Gulf States Oil Corp., Bengston 1, nw 6-4n-63, lcn. Frank E. Kister 1, Niles 1, se 13-6n-61, cellar. Prairie O&G Co.'s O'Toole 1, ne 33-7n-62w, spd. Independent O. & R. Co., Schmidt 1, nw 19-6n-60, rig up. Tulsa-Ft. Morgan's Smith 1, nw 18-6n-60, lcn.

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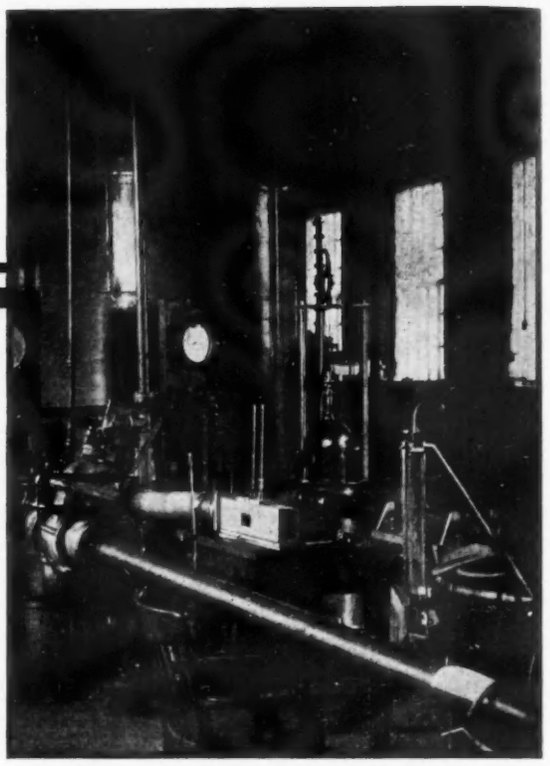

A corner view of the Erie Laboratory. Built in 1912 and progressively enlarged to 3500 sq. ft. It is exclusively devoted to research. Note the 2200 foot Prover in the background, and the several other precision instruments for testing and experimentation.

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Concrete Pumping Rig

R. T. BOLES

R. T. Boles, 508 West Marshall Street, Longview, Texas, has recently received patent on a concrete pumping rig, which he designed for pumping deep wells to eliminate vibration.

The Sampson post and jack post are an integral part of the rig bottom, all of the concrete mixture being poured into a single form. The walking beam is anchored by bolts on the Sampson post, with a steel plate on top of both the Sampson and jack post as protection to the concrete.

The concrete rig has steel forms which are erected on the location, and the construction job is merely one of pouring the concrete. The mixture consists of Grade A concrete properly reinforced with old sucker rods or junked equipment. The forms are adjustable and portable. The job is simplified to the point where any field laborer can assemble the forms. The rig is heavily counterbalanced where required. The concrete rig was originally made for use in swampy territory.

Thirty-two of these rigs are now in operation in Arkansas. R. T. Boles has been in the rig building business for 22 years, being located at Bartlesville, Oklahoma, and El Dorado, Arkansas, during that time. He will furnish detailed information on the concrete rig upon request to the address given above.

"Lindewelder"

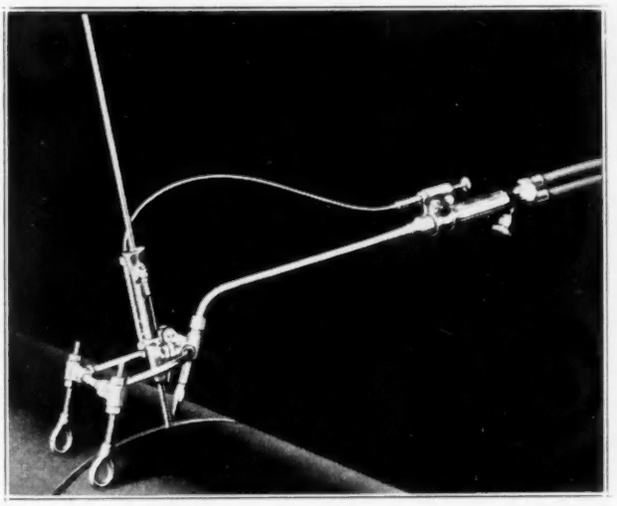
LINDE AIR PRODUCTS COMPANY

Linde Air Products Company, New York, announces production of the "Lindewelder," a two-flame blowpipe with a rod holder which feeds the welding rod automatically by gravity.

A rod-lifting device controlled by a trigger on the blowpipe handle permits the operator to raise or lower the welding rod as required in starting and completing the weld, in passing over tack-welds and in changing rod. A carriage having two adjustable runners supports the blowpipe during the welding operation. This feature provides greater ease in manipulation and complete comfort for the operator, as only one hand is required to hold the blowpipe.

Two separate flames are utilized in the Lindewelder, one for preheating the welding rod and one for performing the actual welding operation. The upper or preheating flame is so adjusted that the inner cone impinges directly on the rod as it emerges from the lower end of the rod holder, preheating it nearly to the melting point. The lower flame is the welding flame, which is directed between the vee and the rod so that it prepares the base metal for proper fusion with the weld metal and simultaneously melts the end of the preheated welding rod in the welding puddle.

In operating position, the Lindewelder is supported by the carriage with the runners straddling the weld directly behind the welding puddle. The runners can be adjusted in length and angle, making it possible to maintain the proper position for all types of work. The position of the rod is such that it



Lindewelder

shields the flame from blowing backwards onto the molten puddle thus permitting the weld to solidify rapidly, giving greater speed and uniformly producing a typical machine-made joint of proper dimension and shape.

Complete information on this device may be obtained by writing Linde Air Products Company, 30 East 42 Street, New York.

Diesel Reference Guide

"Diesel Reference Guide" is the title of a new book written by Julius Rosbloom, author of numerous technical books. The volume is intended for reference purposes and instruction on modern Diesel engineering, land, marine, locomotives, aeroservice, automotive and portable duties, and it also includes a directory of manufacturers of Diesel engines and products essential in Diesel services.

Bound in attractive blue, cloth covers, and containing over 350 large pages of two columns each, the book is profusely illustrated and contains important tables, formulae, charts and drawings.

The data have been carefully selected to suit the needs of engineers and those interested in Diesel engines, and the langauge in which the material is presented is practical throughout. In writing the book the author had the assistance and criticism of numerous engineers, manufacturers and other authorities.

Folowing a general synopsis of the development of the heavy oil engine, the book sets forth a discussion of the theory involved in operation of Diesel engines, a study of gases, discussion of principles of construction and operation of Diesel engines, and gives material on water problems and Diesel practice. Next in their respective order are chapters on methods of maneuvering marine engines, emergencies, instruments and accessories, bearings, supercharging experiments, fuel oil, lubricating oils, pumps, air compressors, and oil storage and piping systems. Then there are chapters on recent noteworthy Diesel developments, horizontal oil engines, oil

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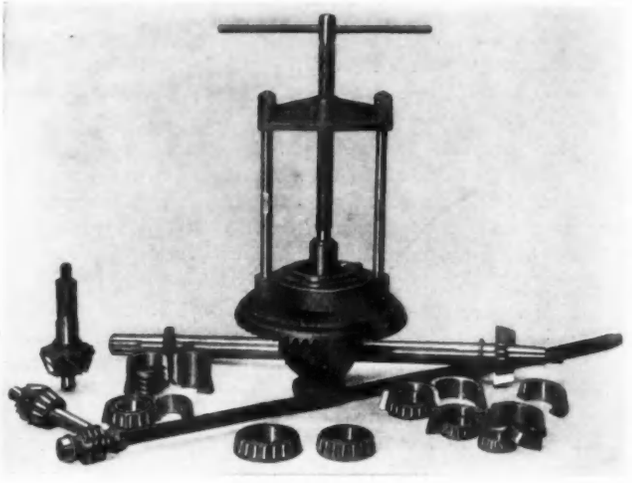
electric locomotives and rail cars, gear transmission for locomotives, automotive and aircraft engines, electro-technology and rules and regulations of supervising institutions. A tabulation shows a land and marine Diesel installation list. The last two sections of the book present conversion factors and various tabulations, and discuss Diesel engine power cost.

This book was published by Industrial Institute, Incorporated, 897-901 Bergen Avenue, Jersey City, New Jersey. The price of the book is $10 per copy prepaid. Copies may be secured from the Gulf Publishing Company, 3301 Buffalo Drive, Houston, Texas, publishers of THE OIL WEEKLY.



Dismounting Press

Dismounting Press

CURTIS AND SMITH MANUFACTURING CORPORATION

Curtis and Smith Manufacturing Corporation, Newark, has announced a dismounting press designed to remove with ease any Timken or other anti-friction bearing without damaging the bearing or the shaft. The press also removes gears, spirals, pulleys, discs, collars and bushings.

The manufacturer has published a bulletin which shows all details of the press complete, cross section views, designs of chucks, adapters, and bases, and set-ups for dismounting all kinds of bearings, gears, worms, and shaft-mounted units. A copy of the bulletin may be obtained by writing Curtis and Smith Manufacturing Corporation, 245 South Street, Newark, New Jersey.

Abrasive Pump

AMERICAN MANGANESE STEEL COMPANY

American Manganese Steel Company, Chicago Heights, Illinois, has added the new type "C" to its line of abrasive materials handling pumps.

This new pump is strictly AMSCO in design, is made of AMSCO manganese steel, and is offered the trade at unusually low cost.

Many new features have been included in these pumps: the bearings are interchangeable in the field, either sleeve or anti-friction types being available—lubrication is required only on main bearings (except where outboard bearings are used)—impeller clearance and main bearings can be adjusted easily without dismantling—thrust and radial shocks are completely absorbed by new bearing arrangement.

The new AMSCO Type "C" pump meets the strictest present day demands for long life, high capacity and low prices, the company claims.

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The President's Organization on Unemployment Relief

Walter S. Gifford

Director

Committee on Mobilization of Relief Resources

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Chairman

The President's Organization on Unemployment Relief is non-political and non-sectarian. Its purpose is to aid local welfare and relief agencies everywhere to provide for local needs. All facilities for the nation-wide program, including this advertisement have been furnished to the Committee without cost.

▼ Manufacturer and Supply Dealer Notes ▼

Parkersburg Rig & Reel Company has established a district sales office on the sixteenth floor of the Tower Petroleum building, Dallas, Texas, with jurisdiction over fields in Texas, exclusive of the Gulf Coast region, New Mexico, Louisiana and Arkansas. Paul L. Brooks is in charge of the district, having previously been located in Fort Worth with New Mexico and the interior fields of Texas handled from the latter point. H. L. Brock is credit manager of the Dallas office. The company is retaining a sales office at Shreveport, with H. A. Miller as sales representative, and also an engineering office is to be maintained at Fort Worth.

J. R. MacRae

Pittsburgh Equitable Meter Company announces the appointment of J. R. MacRae to its sales force. He comes to Pittsburgh Equitable Meter Company from the Dallas, Texas, office of Republic Steel Company. His wide experience in the sales organization of that company especially qualifies him for his new duties of selling both gas and water measuring and regulating equipment. Mr. MacRae will be located at the Dallas office.

Southern Brass Manufacturing and Plating Company, Houston, announces acquisition of the services of Henry H. Paris, formerly manager of the Houston branch of Oil City Brass Works of Beaumont, and Joseph L. Fohner, formerly sales manager of the latter concern. Both will be located in Houston.

Winton Engine Corporation, Cleveland, recently published a catalog showing its line of improved stationary and industrial Diesel oil engines. Among the engines pictured and described in the catalog are: the six cylinder unit for electric power service, 350 horsepower; the three cylinder, 175 horsepower; and the six and eight cylinder high speed Diesels.

A copy of the catalog may be obtained by writing Winton Engine Corporation.

Miller Sand Pump Company, Sapulpa, Oklahoma, has recently issued a new bulletin on its Jiffy pipe clamps suitable for water, gas, oil or steam lines. It is made of malleable iron and can be used either for temporary or permanent repairs. Copies of the bulletin may be obtained direct from the company.

Hiergesell Brothers, Philadelphia, has issued general catalog H illustrating and describing the line of scientific instruments.

Among the instruments shown are barometers, burning test gauges, distillation equipment and thermometers, emulsifiers, flash testers, hydrometers, hygrometers, oil testing instruments, petroleum samplers and viscosimeters.

A copy of catalog H may be obtained by writing Hiergesell Brothers, Philadelphia, Pennsylvania.

Use of Aluminum For Oil Lease Tanks

The corrosive action of concentrated brines on aluminum tank plates under different operating conditions is described by the United States Bureau of Mines, Department of Commerce, in the second of a series of reports on the use of aluminum for oil lease tanks.

The results of a one year test made on an oil lease in the so-called "sour district" near Borger, Texas, where free hydrogen sulphide accompanied the production of oil, gas, and salt water, proved that aluminum lease tanks will withstand corrosion by hydrogen sulphide; but it was found that aluminum was susceptible to attack by salt water which was invariably present in certain portions of the tanks, and that hydrogen sulphide accelerated this salt water corrosion in an indirect manner, state the authors, Ludwig Schmidt, John M. Devine and C. J. Wilhelm.

In order to study corrosion conditions encountered in the tanks during the test period, a laboratory was maintained at the site of the aluminum lease tanks.

All metals have an inherent tendency to go into solution when in contact with water. The extent of this tendency varies for different metals, depending upon their position in the electromotive series. Investigators generally agree that aluminum owes its resistance to corrosion to the protective action of a superficial layer of oxide which is established in sites by auteoxidation. Inasmuch as the metal itself is located relatively high in the electromotive series, it is evident that any set of conditions whereby the oxide film is ruptured or rendered pervious to aqueous solutions will result in rapid corrosion of the metal when in contact with such solutions.

The potential corrosive agents to which the aluminum tanks were subjected in service included natural gas, oil, and salt water, each of which contained free hydrogen-sulphate gas in varying proportions. The field test proved that natural gas and oil were without corrosive effect on the tanks. The salt water, however, was capable of producing serious corrosion. Hydrogen sulphide, in dissolved or free state, did not have any direct action on the tanks, but indirectly it was a contributory factor to corrosion through the production of iron sulphide by interaction with the steel flow lines. Iron sulphide, so formed, was flushed into the tanks and functioned as an accelerator to salt-water corrosion.

All corrosion in the aluminum tanks was of a highly localized nature, resulting in a pitting attack. Nevertheless, it was possible to identify three distinct types of corrosion:

(1) Low-temperature salt-water corrosion, which was encountered where aluminum side sheets of tanks were exposed to the action of salt water.

(2) High-temperature salt-water corrosion, which was encountered in the corrosion of aluminum steam-heating coils within the tanks.

(3) Bimetallic corrosion, which was caused or accelerated by the proximity of steel in electrical contact with aluminum; such corrosion resulted where steel steam-heating coils were installed in aluminum tanks.

Further details are given in Report of Investigations 3131, "The Use of Aluminum for Oil Lease Tanks: Part II—Labortory Tests," copies of which may be obtained from the U. S. Bureau of Mines, Department of Commerce, Washington, D. C.

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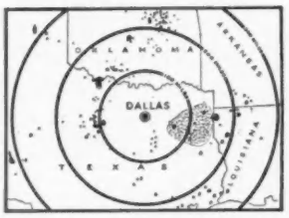

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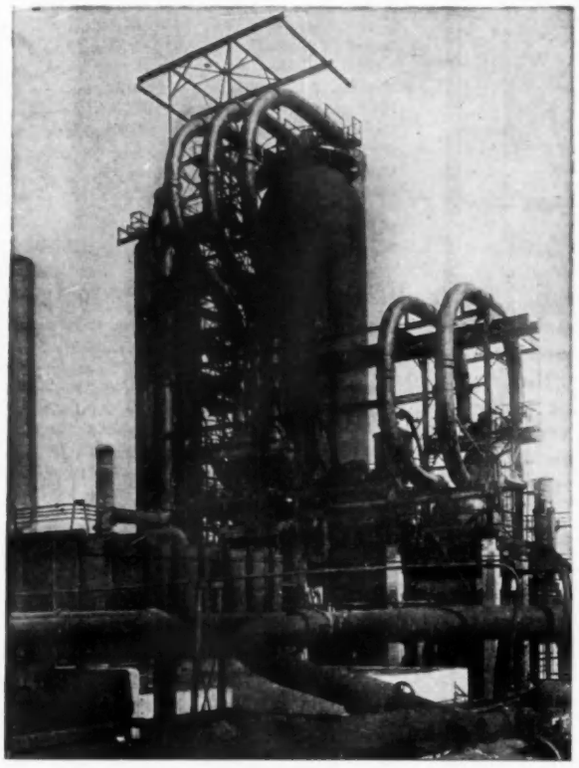

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Squeaks from the Bull Wheel

▼ ▼ ▼

Ramona: "What's a Grecian urn?"

Chiquita: "Oh, about $25 a week unless he owns the restaurant."

"Quick, doctor—do something! I was playing a mouth organ and swallowed it!"

"Calm yourself young man, be thankful you were not playing the piano!"

A slow-pay customer sent the following note to his garage mechanic: "Please send car; if O.K., will send check."

The mechanic, however, was not doing any business on such risky terms, so he wrote back: "Send check; if O.K., will send car."

The doctor was puzzled.

"You ought to be getting well by now," he said. "Have you carried out my instructions all right?"

"Well, doctor," said the patient, "I've done most of them, but I can't take that two-mile walk every morning as you ordered. I get too dizzy."

"What do you mean 'dizzy'?" asked the doctor.

"Well, sir," said the patient, "I must have forgotten to tell you. I'm a lighthouse-keeper."

"Now then, Tommy Brown," said the teacher, "I want to set you a little problem. Suppose there were five children, and their mother had only four potatoes to share between them. She wants to give each child an equal share. How would she do it?"

"Mash the potatoes," said the boy.

"What were you up to when you left the party so suddenly?"

"Oh, I was just playing hide and sick."

Clerk (in private office)—As I am getting married, sir, is there any chance of an increase of salary?

Boss—If you don't get out of here quick, we'll make you a partner and you won't get anything.

"You are reading a travel book. Preparing for the holidays?"

"No, I am on vacation now. I sit here and dream of travel."

"But you are reading the book backward."

"Yes, I am on the return journey now."

"If I were trying to match politeness," said the angry woman customer, glaring hard at the shop assistant, "I'd have rather a job to find it here."

The assistant was equal to the occasion.

"Let me see your sample, madam," she said.

"Why did you give up the stage after appearing in that old Roman play?"

"The audience wanted me to be thrown to them, instead of to the lions."

"Why do you prefer your employes going to church instead of joy riding on Sunday—you're not a religious man yourself?" inquired his visitor.

"Those who go to church do their sleeping there, the others spend most of Monday sleeping on the job," explained the boss.

Barney Oldfield, a real old-timer in the use of Union gasoline, told us of a true experience he had the other day. He was driving through West Texas on his way to the Coast. It was hot and dusty. He came upon a country girl trudging along and stopped and offered her a lift. After about 10 minutes of riding this dialogue ensued:

Girl—Say, how's to drive a little slower?

Barney—I'm not going fast.

Girl (after slight delay)—Who do you think you are—Barney Oldfield?

Barney—Why, yes, that's my name.

Girl—Don't kid me, big boy. He's been dead 10 years. SLOW DOWN!

—*Union Oil Bulletin.*

A good old scout was Heinie Kraut,
Who taught the kids their swimmin';
In winter he hung 'round the ice
And helped the fallen women.

—*Unloading Rack.*

"You want a pound of ochre? Is it red for painting bricks?"

"No, it's tappy ochre wot Ma makes puddin' with."

It was back in mediaeval times.

"It's no fun trying to live in this coat of mail," complained a cootie.

"No," agreed the second parasite. "Heaven help a feller on a knight like this."

"As Kipling says, my dear, woman is 'a rag, a bone, and a hank of hair.'"

"And the man," she answered, as she smiled sweetly, "is 'a jag, a drone, and a tank of air.'"

Rabbi Stephen S. Wise of New York was seated at a public dinner adjacent to a Son of the American Revolution.

"I'd have you know," said the Son, "that my grandfather signed the Declaration of Independence."

"My dear sir," the rabbi told him, "that's nothing. My great-grandfather signed the Ten Commandments."—Saturday Evening Post.

Judge—Do you know anybody who can vouch for your good character?

Accused—Yes, the chief of police.

(The chief of police is called.)

Judge—But he says he does not know you.

Accused—What more do you want? I have lived in his police precinct 20 years, and he does not know me!

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A drilling bit cannot be built on the drawing board. Neither labor nor shop alone can produce it. The APPLEMAN BIT was designed right in the first place and the 'bugs' all taken out of it after long use on the lease. You run no chances when you standardize on the well proven, thoroughly tested and acknowledgedly superior APPLEMAN GUMBO BIT.

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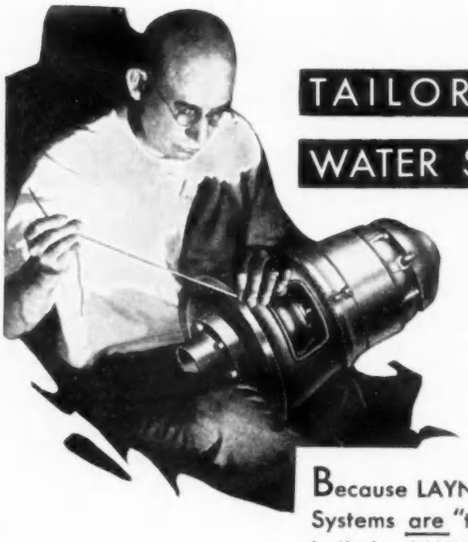

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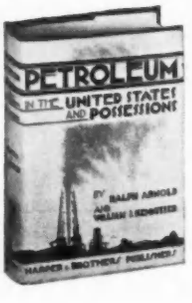

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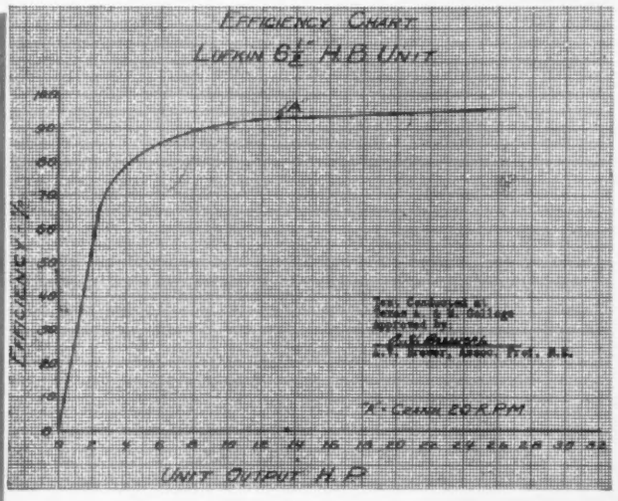
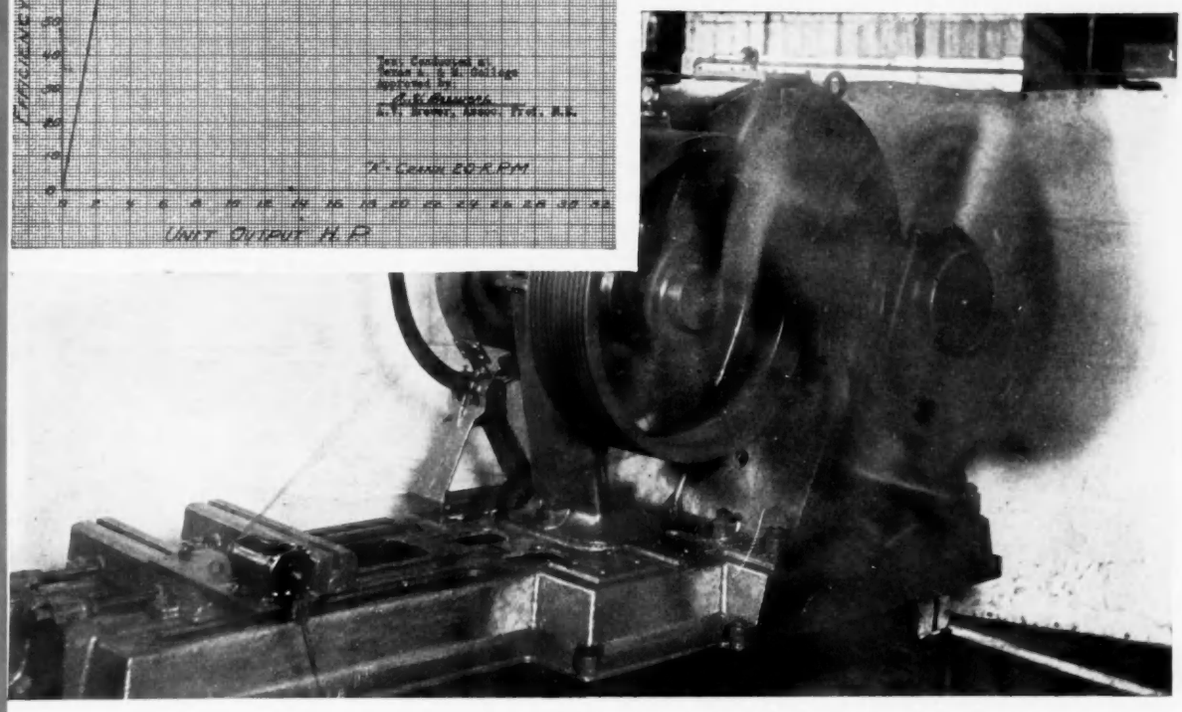


Efficiency chart of Lufkin 6½" Heavy Duty Herringbone Unit—result of test conducted at the A. & M. College of Texas under the supervision of A. V. Brewer, Associate Professor of Engineering. ***Lufkin units are 98.9 to 99.44% efficient.***



Unretouched photograph of Lufkin 6½" Heavy Duty Herringbone Unit driven, at regular speed of 22-strokes per minute, by a ½ H.P. motor. Certainly no friction here!

With Ease A-Plenty—This Half Horse Power Motor Propels Heavy Duty Lufkin Unit At Regular Pumping Speed

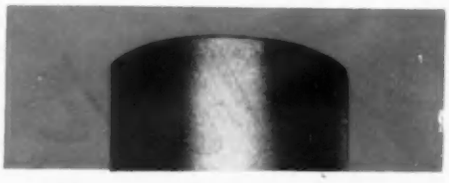
Lufkin — Hyatt equipped — friction-free, Sykes-Herringbone Units are 98.9 to 99.44% efficient according to test conducted in the laboratory of the A. & M. College of Texas. Efficiency chart on test conducted reproduced above.

Such an attained efficiency, coupled with the highest degree of workmanship and of materials conforming to our own rigid specifications, assures the user long, efficient life and economy in operating and maintenance costs. Without obligation, Lufkin Engineers will gladly recommend the correct Lufkin Installation for your lease. — ***Request this cost-free service today!***

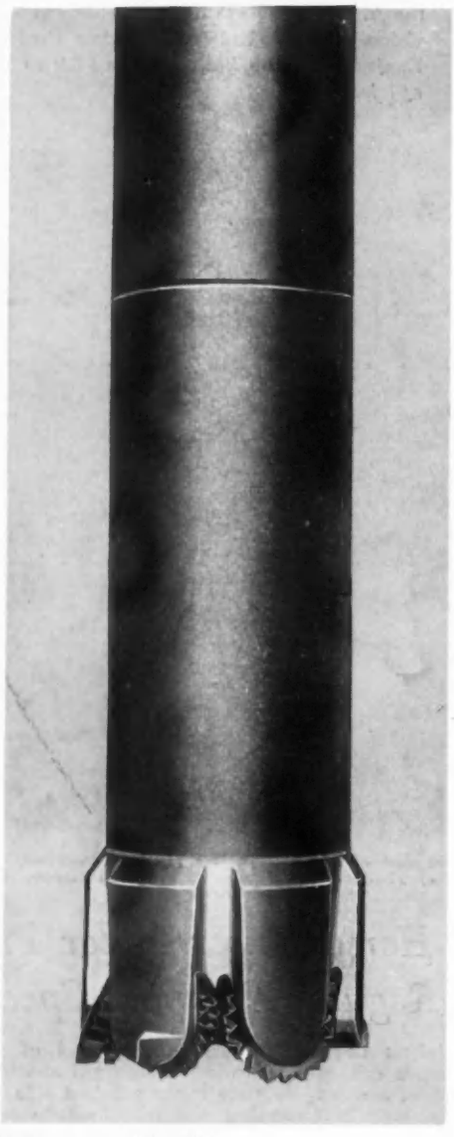
LUFKIN FOUNDRY & MACHINE CO., Lufkin, Texas

Branch offices and warehouses—Houston, Tulsa, Los Angeles, New York, Odessa, Eldorado, Seminole. *East Texas Headquarters*—Crim Crest Hill, Henderson, Texas, P. O. Box 516, Phone 142

LUFKIN UNITS



A CORE BIT... backed by 24 YEARS of LEADERSHIP!



Too often the demand for a new tool or piece of equipment is met by "make-shift" design and hasty manufacture from material of doubtful quality.

This has never been the policy of the Hughes Tool Company.

The Hughes Core Bit was developed to meet a real need of the Oil and Sulphur producing industries, but before it was offered for sale many months were spent in field and laboratory experiments and tests in order that this important tool would uphold the high performance standard required of Hughes Tools.

Operators, contractors and drillers throughout the Industry have found the Hughes Core Bit dependable, safe, economical and certain of core recovery.

"Sold by Supply Stores Everywhere"

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The HUGHES *Core* BIT